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SOME PRACTICAL DEDUCTIONS DRAWN FROM THE KNOWN FUNCTIONS OF THE LIVER.*

BY GEORGE W. WEBSTER, M. D.,
Lecturer on Physiology in Chicago Medical College.

It would seem like a truism to assert that a correct knowledge of physiology must be the basis of all rational therapeutics, and it is only necessary to recall the fact that prior to the delivery of the "Croonian Lectures," by the late Charles Murchison, in 1874, our knowledge of the functions of the liver was in a somewhat chaotic state, which the late Dr. Fothergill referred to as "A sort of Central Africa in the map of the organism."

While much was known before that date, and much more was surmised, clinical observations and theories had not been verified by chemistry and physiology.

But when chemistry aided physiologists to secure scientific accuracy we began to have some precise knowledge of a most important subject.

To Claude Bernard, and others of his time, we owe most of what we were taught upon this subject up to the time of his death.

If it is conceded that the most important object of physiological research is to assist

in the prevention of, and recovery from, disease, the importance of the subject of this paper can not be overestimated, since in the elaboration of the food for the nutrition of the tissues, in the storing up of food in the tissues and in the liver, and of eliminating those substances deleterious to the individual, the liver is the most important glandular organ in the body.

In view of the importance of the subject, and with the hope of eliciting opinions, suggestions, and discussion which may add something to our knowledge of it, I venture to offer some thoughts in regard to it.

To treat it fully would require much time, and I shall therefore call attention to the more important functions of the liver and present some deductions drawn from them, speaking of the minor functions first.

In order to form a correct estimate of the importance of the functions of the liver, it is necessary to keep in mind the relations which the liver sustains to the digestive tract on the one hand, and to the circulatory system on the other.

We must call to mind the fact that as the portal blood stream comes from the stomach and intestinal canal, all of the products of digestion, except the fats, are poured into it—all the fluids, drugs, medicines, and everything ingested and absorbable. In this condition it comes to the liver and passes through it, and for what purpose? In the present state of our

* Read before the Chicago Medical Society, September 17, 1888.

knowledge this question can not be fully answered.

Some of the functions of the liver are quite obvious and well understood; others are not, and they are therefore matters of doubt and discussion. Progress has been made, good work has been done, much light has been thrown on an obscure subject, and the physician has been able to apply the teachings of physiology in the prevention and treatment of disease. I will now attempt to answer the question, "For what purpose does the blood pass through the liver?" The blood as it comes to the liver contains all those substances, except fats, which are necessary for the nourishment, growth, and development of the body, together with many substances of no further use in the economy, and also some which are undoubtedly injurious or poisonous, if allowed to accumulate in the blood. Under normal conditions the latter are excreted, and some of the former are changed and stored up; others are further elaborated that they may be utilized in the general constructive metabolism of the organism. When we realize how far the chemist and physicist are from grasping and interpreting all of the phenomena of inorganic matter, we cannot wonder that the intricate, difficult problems, the phenomena presented to us by living organisms, should not be well understood and our deductions which are based upon them rational. Nevertheless, we are in possession of knowledge which is of value to us if it is properly applied.

I will first state briefly the functions of the liver, the action of the bile, the glycogenic function and its elaborating action on albuminoids, and then attempt to make some practical deductions based upon a knowledge of these facts. The liver secretes bile, which is formed by the cells of the liver. It passes through the bile ducts to the gall bladder and thence into the duodenum as required in the process of digestion. During embryonic life the liver is concerned in the production of red-

blood corpuscles, and in adult life it has something to do with their destruction, possibly through the action of glycogen, as glycogen possesses the power of breaking up and rapidly destroying them.

Lactic acid is formed in the liver. Deleterious substances are arrested and eliminated, and ptomaines are thought to be eliminated in this way.

The liver produces glycogen from the materials furnished it by the blood and stores it up, and again reconverts it into sugar, allowing it to pass out to meet the needs of the system.

The glycogen passes out by way of the blood vessels. We thus have the products of the activity of the liver passing out by two distinct channels, which is an exception to the general rule and our conception of a secreting organ.

The liver is the chief, and perhaps the only, organ concerned in the destructive metamorphosis of albuminoids, and the formation of urea and other nitrogenous products, which are subsequently eliminated by the kidneys, these chemical changes contributing in a marked manner to the production of heat. It also assists in the elaboration of albuminoids, fitting them for taking part in the metabolism of the tissues.

The bile is partly an excretion and partly a secretion, and after it passes into the duodenum it takes part in the process of digestion. It emulsifies fats, moistens the walls of the intestinal canal, and facilitates the passage of fats into the lacteals, since it has a certain relation to watery solutions as well as to fats. It contains a ferment which converts starch and glycogen into sugar. It excites contractions of the muscular walls of the intestines, and thus promotes absorption, and its presence increases the vital activity of the intestinal epithelium in the absorption of fats. It retards putrefactive changes in the intestinal canal, and by some it is claimed to be an antiseptic. It prevents the action of gastric juice in artificial digestion, but

recent experiments seem to prove that in natural digestion in the stomach it has no such effect. Even where a fistula was formed and all the bile allowed to flow into the stomach, it did not affect the first period of digestion and did not induce vomiting as it is quite generally supposed to do.

Among the most important constituents of the bile are glycolic and taurocholic acid, both being nitrogenous in origin and both formed in the liver by its cells from materials furnished by the blood.

That they are formed in the liver is shown by the fact that after extirpation of that organ there is no accumulation of them in the blood.

That they are nitrogenous in origin, or derived from the nitrogenous elements of the food, is shown both by their chemical composition and by the fact that they are notably increased in amount by the administration of nitrogenous food. Cholesterin is one of the principal excretory products and is kept in solution by the bile salts.

We understand by the term glycogenic function of the liver, its power to form glycogen from the materials supplied to it by the blood, and, under normal conditions, to store it up and to reconvert it into sugar to meet the requirements of the body.

Its origin is largely from the carbohydrates of the food taken, which is shown by the fact that it is increased in quantity after the ingestion of a meal rich in those substances.

It can also be formed from other classes of foods, and it is formed in minute quantities even during starvation.

When the amount of sugar in the blood exceeds five to one part in 1,000 it is eliminated by the kidneys, and the condition is known as glycosuria. When due only to excess in the blood, as after a hearty meal of carbohydrates, it is of no consequence; but when due to disease of the liver, which prevents it from converting the sugar of the food into glycogen and storing it up as

such, it becomes one of the most serious and fatal of diseases.

That diabetes is a disease of the liver is shown by the fact that in an advanced stage of the disease the glycogenic function of the liver is almost abolished, and the patient becomes rapidly emaciated, because the tissues are unfed, since the sugar all slips away through the kidneys.

This is also proven, since a part of the liver has been removed from a man almost dead of diabetes, and it was found to contain almost no glycogen.

The percentage of sugar in the blood, and, therefore, the amount eliminated by the kidneys and taken away from the tissues, is increased by any condition which retards the circulation in the liver, thus allowing the ferment a longer time to act on the glycogen. This is what occurs when we puncture the lower part of the floor of the fourth ventricle, which is the hepatic vaso-motor centre, and puncture of it paralyzes the hepatic vessels. Many drugs act in the same way, notably curara, morphia, chloral, mercury, and alcohol.

Glycosuria may also be caused by chloroform narcosis, possibly by tending to cause paralysis of vaso-motor centres generally. Stimulation of the sciatic nerve may also cause it reflexly, and this may account for the fact that many people suffering from sciatica have sugar in their urine.

The increased amount of sugar in the urine may be caused by:

(1) Increased formation of sugar by the liver beyond the needs of the body.

(2) Decreased oxidation of sugar by the tissues, allowing it to accumulate in the blood.

(3) It may, as in diabetes, pass through the liver without being acted upon by the liver cells, and is, therefore, not stored up, but is eliminated by the kidneys.

The first condition may be due to a diseased condition of the liver cells or to a derangement of the circulation caused by disease of the nerves, nerve centres, or circulatory system. The third condition

is evidently one of disease of the liver cells.

Glycosuria when present may be set aside in either of two ways: section of the splanchnic nerves, which renders the liver anæmic; by the administration of glycerine, the latter substance seemingly acting on the cells of the liver, since when glycerine is administered, puncture of the floor of the fourth ventricle either does not cause diabetes, or only to a slight extent.

That the liver has an important function to perform in the oxidation and in the elaboration of albuminoids there can be no doubt.

All of the albuminoid food ingested must be converted into peptones in the alimentary canal before it can be absorbed, as albumen cannot be absorbed as such. From the time they enter the portal circulation until they emerge from the liver they again undergo further elaboration to fit them for aliment for the tissues, and to remove from them poisonous properties.

There are two kinds of proteids in the body: Those which form nitrogenous tissue or organic albumen, and those which circulate in the blood as a ready supply for the nutritive demands of the tissues, and are known as circulating albumen, or serum albumen. The latter form 3 to 4 per cent. of the blood. According to Voight, only 1 per cent. of the organic albumen is transferred in the 24 hours, while 70 per cent. of the serum albumen is transferred in the same period of time.

If all of these processes go on in a physiological manner, the albuminoids of the food take their part in the metabolism of the body and are oxidized, and the end product, urea, is finally excreted by the kidneys.

While these processes are going on in a normal manner and albuminoids are not in excess, all is well, but when they are in excess, or when they cannot be properly handled by the liver, what occurs?

Professor Albertoni has shown, according to Dr. Brunton and quoted by Dr.

Fothergill, that peptones, if introduced into the general circulation, have the power to destroy the coagulability of the blood, depress and slow the heart's action, arrest the functions of the kidneys, and to cause convulsions and death.

Now, it appears from the above evidence that peptones may be poisonous, and that even though our patient have a perfect digestion as far as the stomach and the intestinal canal are concerned, if the trouble be in the liver and the peptones are not acted upon by it, we may have the injurious effects of the peptones. At the same time the tissues are unfed, the peptones are not elaborated and are drained away by the kidneys, and the individual suffers accordingly.

Again, part may pass away in this manner and the remainder undergo a retrograde metamorphosis, being changed to leucin, tyrosin, and uric acid, and thus the liability to disease of the kidneys is engendered by the elimination of waste materials, the result of this sub-oxidative process.

Again, if these waste products are not eliminated, we may have an accumulation of them in the blood, with the conditions of lithæmia, gout, nervous prostration, or even the typhoid condition.

In most forms of indigestion we are in the habit of prescribing pepsin, and various artificial digestive ferments, which are good enough when properly used; but when the fault lies, as it often does, with the liver, then we have not gone far enough.

The peptones may be formed and even absorbed, but if not further elaborated they are not only useless but may be, as has been shown, positively injurious. In this connection, Dr. Brunton says "children should not play with edge tools."

We often prescribe pepsin when we ought, instead, to stop the administration of albuminous food and do something to aid the liver.

In the metabolism of albuminoids we have the origin of many maladies, and the

better we keep this in our minds the more successful will be our treatment.

We recognize the action of the liver in dealing with albuminoids, and we know now that urea is formed in the liver from the nitrogenous foods, and not in the kidneys, and that the appearance of albumen in the urine is a derangement of the liver primarily, and that the elimination of these substances may, and does, cause disease of the kidneys.

This has been well and forcibly stated by Professor Geo. S. Johnson: "Renal degeneration is a consequence of long continued elimination of waste products of faulty digestion through the kidneys."

Bright's disease is a condition of waste-laden blood, blood overcharged with nitrogenized waste, not waste representing the oxidation of the tissues, but a sub-oxidation of nitrogenous elements of food, and it matters not whether the starting point was injury to the kidneys by the attempt to excrete this mass of waste material, or whether it was due to some primary disease of the kidney cells, as in scarlatina. The treatment is the same. Begin at the source of the difficulty and stop the administration of nitrogenous food.

If "physiological rest" means anything, and is of value anywhere, it is just here; and rest for the liver and kidneys is the only way to enable them to regain lost power and to restore disordered function.

In conclusion, then, I would say, in icterus, avoid fats, as they are not absorbed on account of absence of the bile in the alimentary canal.

Where patients have inherited an inefficient liver, where they have gout, lithæmia, biliousness, an excess of bile acids, most diseases of the skin, or Bright's disease, avoid nitrogenous foods.

If we have glycosuria or diabetes, we must avoid sugars and all food which produces them.

I would like to ask the members of the society whether we can have an efficient liver as far as its glycogenic function is

concerned, and yet inefficient in its elaboration of albuminoids? Do we possess drugs capable of assisting or stimulating one, without influencing the other?

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THE PRIMARY PHYSIOLOGICAL PURPOSE OF THE MEMBRANA TYMPANI.*

BY S. O. RICHEY, M. D.
WASHINGTON, D. C.

In the development of anatomical structure, special organs, or parts of organs, come into existence as change of environment, or preparation for change of environment, demands them, for the perpetuation of individual existence. Aquatic animals have some peculiarity in various organs which fits them for the medium in which they live, but these organs are *unfitted* for life in the air. Land animals by certain other peculiarities of structure are *unfitted* for existence under water. Amphibia, by organic structure and therefore organic function, are qualified for both varieties of life. The young of amphibians, spawned in water, have branchiæ, the breathing apparatus of fish, but, with one or two exceptions, adults have lungs instead, the branchiæ giving origin to other needful appendages. Fishes, living always in the water, have no eyelids. Many of them have movable folds, initial upper and lower lids, while in some sharks there is a third fold, forming a nictitating membrane. Most commonly the integument continues immediately into the cornea. In reptiles and birds there is an upper and a lower movable eyelid and a nictitating membrane. In some lizards and in serpents, the eyelids are an annular fold, which becomes a pellucid, or transparent, membrane in front of the eye *protecting the eye from the external medium* (Gegenbaur, Comparative Anat-

* Read in the Otological Section of the American Congress of Physicians and Surgeons, Washington, September, 1888.

omy, p. 532). The lachrymal gland appears first in amphibia and reptiles. In reptiles, birds, and some mammals the Harderian gland, the secretion of which is not exactly like that of the lachrymal gland, opens under the nictitating membrane, or the pellucid continuation of integument. These glands are alike in reptiles and birds. In amphibia, even the efferent duct is foreshadowed by an epithelial development, forming a canal to carry off the secretions of the gland.*

The first rudiment of an internal ear is an involution of the integument into a small sac, and occurs among the lower fishes. The crayfish has a simple auditory arrangement, consisting of an auditory sac, or involution of the integument, with fluid contents, a nerve, whose filaments enter auditory hairs, which project into the fluid contents of the sac; no middle or external ear exists. The lamprey possesses two semi-circular canals, and a sacculated vestibule as an auditory organ. Crocodilia have external ear openings closed by a flap of the integument, and this is the earliest suggestion of an outer or drum membrane which I can find in the history of the development of animal life. The ears of birds resemble those of crocodiles. All amphibia have a fenestra ovalis with a cartilaginous, or osseous, columelliform stapes, the expanded proximal end of which is fixed to the membrane of the fenestra (Huxley). Many, if not all, batrachia possess a fenestra rotunda; some have no tympanic cavity or membrane, though tympanic cavities exist in others, communicating with the throat, and tympanic membranes exist to which the stapes is attached. The tym-

panic membrane in the aglossa is a cartilaginous expansion of the columella. Except the frog, most amphibia have no tympanic membrane. The fenestra *ovalis* only may be found, which is connected with the exteriorly situated membrana tympani in the frog by three auditory ossicula. In reptiles and birds there is one columella. The auditory structures are alike in the lowest mammals and birds; they are similar in man and the higher mammals.

To sum up, the eye, the breathing apparatus, and the ear are more superficially placed in the lower forms of animal life, inhabiting water. As they approach higher forms of life and change their environment they adopt certain changes in structure better adapted to their exposure. The eye is protected, in some instances, from the desiccating influence of the atmosphere by a continuation of the integument, that part of which covering the eye becoming transparent; a tear-gland is developed, supplying the eye with moisture under this covering. As this structure varies to that of two lids, which, by separating, increase the exposure of the eye, the secretion of tears becomes more than ever before necessary, and the gland becomes more highly developed, to supply the more rapid evaporation of moisture. The nictitating membrane in the amphibia answers the double purpose of protection from the irritating effect of impure water upon eyes accustomed to the lighter medium—air; and from the irritation arising from the rapid evaporation caused by the air.

The breathing apparatus of aquatic animals, the branchiæ, being superficially placed, are, for the same reasons, unsuited to amphibious and land animals. The lungs are centrally situated; air, to reach them, must pass over a considerable extent of moist membrane, and is thus materially modified. Is it not most rational that for a similar purpose the auditory apparatus is fixed farther from the surface, and similarly protected? The denizen of

* Naturally here arises a question in regard to the heredity of the *hyperopic* eye, which is the common form in the young of the human race. In water, the refractive power of which is greater than of air, the refraction of the eye needs to be less than in the human being. This suggestion is fairly indicated by a comparison between the states of refraction of the eyes in savages and in civilized races; in the refraction of the young and the adults of civilized races; and in the tendency to *increase* of refraction by heredity and other causes among the more highly civilized, and hence older races.

the sea needs no conducting apparatus better than the element in which he moves, as the power of conduction of sound, inherent in water, is less only than that of solids. Hence, an auditory sac, for the perception of sound, is all that is necessary, and we find him so supplied. The sac is kept in a condition of proper pliability by the water.

This leads us to a purpose of this paper—the important function of the membrana tympani in man.

The delicacy and pliability of the membrana secundaria must be preserved. It is therefore deeply situated, the external air reaching it only after passing over the mucous lining of the nares, pharynx, and Eustachian tubes, and becoming so saturated with moisture and modified in temperature, as not to subtract moisture from the delicate tissues of the auditory apparatus and lessen their pliability. It is the chief purpose of the membrana tympani to protect the tympanic cavity from the access of unmodified air in its direction. The whole structure of the conducting apparatus subservient to the delicacy and pliability of the membrana secundaria, at the same time aiding, and not repressing, the effect of the sound-waves upon the labyrinthine fluid. A perforation of the membrana tympani little, if at all, affects *immediately* the function of the organ. In time, direct exposure to the air causes gradual change in the structures of the cavity, and therefore impaired function. The smaller the perforation the more gradual the influence, but *any* opening must be similar in its effect upon the structures of the cavity to that of an opening into any other joint, for this is, to all intents, a large joint. In Stricker's Physiology, p. 969, we read: "The articulating surfaces of the ossicula resemble other true joints—they have capsules and a layer of hyaline cartilage on the articulating surface." * * * "The ossicula in adults are covered by mucous membrane, and a very thin perios-teum." Besides, there are other tissues in this cavity to whose proper function moist-

ure is necessary, and to which the action of unmodified air must prove deleterious—muscles and membranes. Though the articulations of the ossicula must be impaired in their movements by the chilling and desiccating effects of the air reaching them so directly, this would not express itself in impaired hearing, so long as the membrana secundaria is not stiffened, or excluded from the direct impact of sound-waves by closure of the perforation in the membrana tympani. What otologist has not seen cases in which, with an apparently normal condition of the middle-ear structures, decided increase of impaired hearing would follow a cicatricial closure of such perforation, to improve when sufficient time had elapsed to enable the tissues to become pliable from the natural secretion of the lining membrane? When the lining membrane is disabled by disease from producing this necessary moisture, the impairment of hearing is likely to persist. We will do well to remember that the tympanic cavity is much in the nature of a *serous* cavity, subject to the same maladies as a joint deprived of its capsula, when the drum membrane is removed by disease or otherwise, or when the cavity is exposed by a persistent perforation of the membrane, though not quite so intolerant as a joint. In amphibia the labyrinth is relatively smaller than in fishes; smallest in the mammalia. Thus the nearer to full protection from the direct action of the air, the more developed the tympanic membrane and the deeper seated the labyrinth, the smaller it is, and the less *fluid* it will contain. What is the relation between this fact and the processes of exosmosis from the labyrinth of the fluid contained by it, and evaporation of this fluid? In oto-sclerosis, or when perforation of the membrane exists, may not profound, almost total, deafness be due, in part, to exosmosis and evaporation of the fluid contents of the labyrinth, through an Eustachian tube of enlarged calibre, limiting motion of the perceptive elements by diminution

of the fluid in which they float, as well as by ankylosis of the ossicula, or other morbid changes of the middle-ear structures?

We find in Gegenbauer's Comparative Anatomy (p. 527), after his discussion of the labyrinth: "Other parts are gradually added as accessory organs to the auditory organ, although primarily having no relation to it." By "accessory organs" he indicates the development of the bony tympanic cavity from the first branchial cleft; the involution of the pharyngeal mucous membrane forming the Eustachian tube; the involution of the integument, forming the external meatus; the formation, at the points of overlapping of these canals, of the drum membrane; these two tissues, with the *membrana propria, developed from the connective tissue lying between,** making up the tympanic membrane.

Evidently the development of these structures *subsequent* to the existence of the perceptive organ, and *exterior* to it, was with a purpose other than sport. When the simplicity with which nature usually works is borne in mind, we can not believe it was for the purpose of merely making the organ more complex. Can we be certain that the existence of a transmitting mechanism improves the perception? A temporary opening of the tympanic membrane, without other tympanic structural change, does not noticeably impair hearing.

In view of the otherwise guarded position of the labyrinth, is it not most rational to suppose the tympanic membrane to exist, also, for that purpose; especially, with the history of the contemporary development of the eye and its appendages, and the lungs with their more central location and appendages, and the protection which this implies?

This theory of the primary purpose of the tympanic membrane opens up a vast field

of aural therapeutics for consideration. In reading aural therapeutics, one must be often impressed with the frequency of ad captandum methods, and the sad experiences and failures in manipulating this obscure organ. We see the immediate effect of the air douche; what is the remote result of its frequent repetition? What was the rationale of the endeavor to maintain an opening in the tympanic membrane in "progressive deafness," when by proper management the Eustachian tube could be kept patulous? Why has so much attention been exhausted upon the tympanic membrane, when its changed appearance is so manifestly due to alterations in the structures behind it? The philosophy of surgical violence to this delicate organ, unless in case of destructive disease, is questionable. Nature is wise, and her effort, so persistent, to heal a drum membrane, whether a perforation is the result of surgical violence or of disease, would indicate some other object in the existence of the membrane than the transmission of sound-waves. If this were not so, why should an opening in the membrane, designed by the surgeon, close, regardless of attempts by tents, eyelets, etc., to keep it open?

My impressions of the advisability of an imperforate membrane are so strong that I have never made an opening in it, except to evacuate fluid from the cavity. On the other hand, for more than ten years it has been my systematic practice to endeavor to close such openings. In case of chronic suppuration of the cavity, if the drum membrane is not restored, the discharge will recur at intervals. In no case in which the drum membrane has been restored under my observation have I learned of a recurrence of the suppuration. Such a result pre-supposes the destruction of the pyogenic membrane and all germinal matter, but it also suggests some other purpose for the existence of the tympanic membrane than its participation in the transmission of sound-waves to the internal ear.

* Hunt, Trans. Internat. Otol. Cong., 1876, pp. 104-112.

CONCLUSIONS.

(1) The primary purpose of the tympanic membrane is that of protection of the tympanic cavity from the evaporating influence of the air; to prevent the *parching* and *stiffening* of the membrana secundaria, the joints of the ossicula, the tendons of the tympanic muscles, and to prevent loss of the labyrinthian fluid by evaporation.

(2) It, being necessary for the protection of the cavity, is modified into part of a transmitting mechanism by the existence of the ossicula and their attachments—a secondary physiological purpose.

(3) A permanent opening of the membrane may, under given circumstances, temporarily improve the function of hearing, but is harmful to the ultimate condition of the organ.

(4) The tendency of the membrane to heal is an effort on the part of nature to preserve the function of hearing from the effects of disease or ill-advised surgical interference.

A NEW METHOD OF FEEDING IN CASES OF INTUBATION OF THE LARYNX BY POSITION, HEAD DOWNWARD, ON AN INCLINED PLANE.*

BY W. E. CASSELBERRY, M. D.,

Professor of Materia Medica and Therapeutics and of Laryngology and Rhinology in the Chicago Medical College, Medical Department of the Northwestern University.

The operation of intubation of the larynx, for the relief of diphtheritic croup and other forms of laryngeal stenosis, has become so familiar to all that it is unnecessary to review it, even in brief. We therefore proceed at once to consider the subject-proper of this report, which is the subsequent feeding of the patient. This is the most serious difficulty pertaining to the after-treatment. The tube has been inserted,

the dyspnoea is relieved, and the child, previously much exhausted by its struggle for breath, usually rests and sleeps quietly for a time. All goes well for six hours or so, when comes the question of how to give nourishment.

It is manifest that, with the action of the epiglottis impaired by the open tube in position, fluids and even semi-solids in process of deglutition will run through the tube into the trachea and thence into the lungs. Pulmonary inflammation, especially recognized by the Germans as *schluck-pneumonie*, is thus excited, and this, under the circumstances, is nearly always fatal. Not that the entrance of food material into the lungs is the sole cause of pneumonia occurring in the course of diphtheritic laryngitis, for this complication frequently arises by simple extension of the diphtheritic inflammation downward, and occurs, at times, after tracheotomy, when deglutition is unimpaired, but it is an additional exciting factor and one which is capable of originating pneumonia in the absence of other causes.

It has been sought to obviate the trouble with the administration of liquids, by substituting semi-solids and ice in lieu of water, but these do not suffice. It is said, give the patients ice, wrapped in a cloth, to suck, and they will obtain sufficient water to supply the demands of the body, and this would seem to be true, but it is not, for they will cry piteously for water after sucking ice for hours.

The constant cry of water! water! is often so distressing as to cause both the friends of the patient and the surgeon to regret having selected this operation in preference to tracheotomy. The patient has fever and constant thirst, and even in sleep and in delirium will mutter and cry for water. The nasal feeding-tube was introduced to meet this necessity. A soft rubber catheter, which is attached to a Davidson syringe or to a fountain apparatus, is passed through the nostril into the stomach, and through it water, milk, and

* Read before the Chicago Medical Society, September 8, 18.

other liquids can be rapidly introduced. It usually works well in the beginning before the child has learned what it is, but after the first time or two there is always an exhausting struggle, and one must also work very quickly to pump sufficient liquid into the stomach before the child will vomit tube and all, from the irritation of its presence in the fauces. Moreover, it is practically impossible to introduce the tube often enough to satisfy the desire for drink. So this method, although useful, is insufficient.

The artificial rubber epiglottis proved a failure. To further the solution of the problem Dr. Waxham devised the metal epiglottis tube, which is fitted at its top with a thin metal lid—the epiglottis, which, by means of a fine gold spring, is maintained in an upright position, except when the natural epiglottis pushes it down in process of swallowing. This tube works properly only when it is in exact position; if it becomes somewhat turned on its axis, or if it is small enough to sink a trifle low, leakage into the tube will ensue, through failure of the natural epiglottis to approximate accurately the tube and its metal lid. I feel constrained, also, while much admiring the ingeniousness of its mechanism, to advise against the use of the metal epiglottis tube, except, possibly, by the most skillful hands, because of the serious complication which the lid presents to the introduction of the extractor for withdrawal of the tube.

In June, 1888, through the courtesy of Dr. Frank Cary, I performed the operation of intubation of the larynx in a case of diphtheritic croup. We encountered the difficulties which I have enumerated, and which I had so frequently experienced before. The child was given ice, and still there was an incessant cry for water. The nasal feeding-tube was used, with the usual partial degree of success only. We were much distressed about the case, and in thinking of some means to administer liquid to the child, the thought occurred

to me, Is there nothing in *position* that will help us? Answered at once by a second thought, Why yes! Stand the child on its head and let it drink. Certainly, by means of muscular action it could swallow upward through the œsophagus, just as one does when leaning far over to drink from a spring, while, in this position, the liquid could not gravitate upward through the tube. Naturally the idea followed that a modification of the position would suffice, one with the body inclined, head downward, at such an angle as to prevent water by gravitation, aided by any slight propulsive force given it in pharyngeal deglutition, from trickling through the tube. On going to the house, I met Dr. Cary and told him that I had determined to stand the child on its head and let it drink, when he remarked that the same thought had occurred to him; that he had even mentioned it that morning to another physician, who had laughed at the idea, but that he meant to suggest it to me. We directed the nurse to hold the child in her arms, on its back, with its legs tilted upward and its head hanging downward over her arm, so as to incline the body, neck, and tube at a considerable angle. In this position it would suck through a rubber tube from a glass, and swallow without the slightest difficulty all the liquid it wanted.

The matter seems so simple that we marvel that it had not been thought of previously. Several thousand cases have now been treated by intubation, and in all the necessity for a method such as this must have been apparent. Communication was held with Dr. F. E. Waxham, well known in connection with intubation, who said he had never heard of the method, and that he would try it. He has since done so in several cases, and he is enthusiastic over its success; says it is the next thing to the discovery of the operation itself. Dr. Cary communicated with Dr. O'Dwyer, who had heard nothing of it and seemed to ridicule the idea of the practicability of the method. Danger of

congestion of the brain would occur to everyone, but it is not realized in practice.

The first case died from extension of membrane below the tube, but died having demonstrated the utility of this plan of feeding.

The second case in which I tried the method was one in the last extremity of diphtheritic croup, and seen through the courtesy of Dr. Frank Billings. A request for an hour's delay to send for apparatus was met by Dr. Billings' reply that the child would certainly then be dead. A *metal epiglottis tube* was inserted at once, and a good case thus presented to test the efficacy of the lid alone. In the upright position, with the epiglottis tube *in situ*, the patient could not swallow water or milk without coughing, indicating entrance into the trachea. In the inclined-plane position, with the head hanging downward, it took any quantity of liquid without the slightest difficulty. That child recovered.

The third case, left temporarily in my care by Dr. Waxham, was one of laryngeal growth, in which a tube had been inserted to relieve the dyspnœa. It also was wearing the epiglottis tube. It could swallow, but only with difficulty, and Dr. Waxham had already introduced the inclined-plane method, which was used with delight by the child, and much to the relief of the parents. It continued to work successfully under my observation as long as the tube was worn.

Regarding the exact position; the angle has varied in different cases, but from 45° to 90° seems necessary to obtain the best results. The child is held on its back in the arms of the nurse, the legs elevated, and the head left to hang over the arm. Then it may take the mouth of the feeding-bottle, suck through a tube from a glass or feed from a spoon. The only difficulty is encountered when the child is again placed in the upright position, which posture it must not be permitted to regain until it has been made to swallow three or four times after the vessel of liquid has

been taken from its mouth, in order to swallow all the fluid which has gravitated into the pharynx and naso-pharynx. After they have learned this they will readily swallow several times, so as to force the liquid remaining in the throat into the stomach before the upright position is again taken, and then there is no trouble. The patient can be inclined without inconvenience for a minute or more, although much less than this only is necessary.

There is no danger of the tube slipping out unless one of too small size has been inserted, when it would become a fortunate accident, permitting the selection of a proper size for re-introduction.

70 MONROE STREET.

EDITORIAL.

SURGERY OF THE BRAIN.

With the long-established operation of trephining in cases of injury to the brain, and the recent advances in thoracic and abdominal surgery, it seemed as if the fields open to surgery had been about all cultivated, but with the report of Macewen, made at the last meeting of the British Medical Association in Glasgow, in August, and the more recent report in the Congress of Physicians and Surgeons in Washington, last month, of the work of Mills and Weir and Horsley and others, it seems established that it is no longer necessary to stop with trephining the skull; that the brain itself may now be invaded in some cases not only with safety, but with surprising advantage. Whether the lovers of notoriety will be as reckless hereafter in brain surgery as they seem to have become in abdominal surgery remains to be seen. With some, evident desire for notoriety seems so irresistible that in all probability the near future must witness the passage beyond a line of safety into the wide domain of uncertainty and risk, and sometimes to the detriment of the patient.

If laparotomy, to verify diagnosis, be justifiable, will not some reckless or injudicious diagnostician want to verify a diagnosis of compression of the brain, and feel more free to trephine the skull, only to find that his supposed case of compression proved to be but the stupefaction produced by alcohol? It seems to be as difficult as ever to avoid excessive conservatism on the one hand and reckless surgery on the other. Now that prudent surgeons have shown that surgery may advance somewhat beyond what were supposed to be its limits of safety, the doors have been opened for the imprudent ones. How soon shall the reports of the first victims be looked for? Scylla may be avoided, but let not Charybdis claim the escaped as victims.

THE OUTBREAK OF YELLOW FEVER.

The outbreak of yellow fever in Florida has yet given but little indication of abatement. The lateness of the season, at its beginning, gave some hope that the reappearance of the disease might not be attended by such distress as characterized its occurrence on some former occasions, but that hope has not been realized, and the suffering, distress and demoralization have been great. Whilst there has been no general epidemic of it, yet the disease has not been confined even to the State of Florida.

Aside from the fatality and the suffering which have resulted from the disease, and the monetary loss which attends the interruption of commerce, three important facts have been made apparent by the recurrence of the disease this season: First, that the unsanitary conditions of many parts of our Southern States remain as in former years, notwithstanding the great advance in sanitary science in the last few years, and that those conditions, when accompanied by high thermometric and low barometric states, are favorable for the

spread of the disease. Second, that so far the National quarantine laws have been inadequate, and have failed to prevent the importation of infected persons or property. Third, that notwithstanding the liberal provision made by the Government for investigation regarding the cause of the disease, no practical results of value have been attained, and that our ideas of its pathology and therapeutics are little, if any, in advance of what they were a quarter of a century ago.

If the disaster of this year should result in securing better sanitation in future in the Gulf States, and greater security for the inhabitants of them, the lesson of this year, calamitous as it has been, will not be without some compensating aspect, and some basis for hope for future immunity.

THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

The first of what is contemplated as a triennial congress of physicians and surgeons, to be held in Washington, occurred in that city on September 17, 18, and 19. In accordance with the announcement previously made, the congress was composed of most of the National societies of the various special departments of the medical profession, which held separate sessions of those societies during the day, and met in general congress during the evening. The attendance, whilst not very large, was fairly representative of the better element of the medical profession of our country, and a number of prominent physicians and surgeons from Europe were present, and participated in the work of the congress, and of the various societies.

The scientific work, whilst it was not all of equal merit, was, both in the congress and in the societies, of such a character as to be a fair index of the most advanced ideas of medical and surgical science of the day.

So many societies being in session at the same time made it an exceptionally diffi-

cult occasion for securing accurate reports of the work done in the different societies, but from the report of the representative of the *Journal and Examiner*, and from those of some of the weekly journals, we are enabled to give in this issue an epitome of the work of the congress, and of societies composing the congress, and the by-laws which are to govern the next congress.

Whilst this one adds one more to the multiplicity of medical organizations in this country, it will have an advantage over all of the others in the fact that it is to occur but once in three years. If some of the other organizations should not call their members together more frequently than every three years, it might prove a boon to the medical profession, even if there should prove to be fewer offices to be sought.

SOCIETY REPORTS.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

FIRST DAY—Morning Session.

The First Tri-ennial Meeting. Held in Washington, D. C., on September 18, 19, and 20.

The meeting for organization and to receive the report of the Executive Committee was held on September 18.

It was called to order by Professor WILLIAM PEPPER, of Philadelphia, as Chairman of the Executive Committee, who made a report of the work of that committee.

Dr. JOHN S. BILLINGS, of the United States Army, President of the Congress, then took the chair and responded in a brief address.

Dr. SAMUEL C. BUSEY, of Washington, Chairman of the Committee of Arrangements, welcomed the Congress, and dwelt upon the advantages which that city offers as a place of meeting for scientific societies.

The following are the by-laws adopted:

1. This organization shall be known as the Congress of American Physicians and Surgeons.

2. It shall be composed of national associations for the promotion of medical and allied sciences.

3. It shall hold its sessions tri-ennially in the city of Washington, D. C.

4. The officers of the Congress shall be a president, vice-president, a secretary, a treasurer, and an executive committee.

5. The president shall be elected by the executive committee, of which he shall ex officio be a member. He shall preside at the sessions of the Congress. He shall deliver an address.

6. The presidents of the participating societies shall be ex-officio the vice-presidents of the Congress.

7. The secretary and treasurer shall be elected by the executive committee. They shall be ex-officio members of the executive committee.

8. The executive committee shall be composed of one member from each participating society; and said member shall be elected by the various societies at the next annual meeting subsequent to the Congress. It shall be charged with all duties pertaining to the organization of and preparation for the ensuing Congress, including the election of all officers, and of a committee of arrangements. It shall superintend the publication of the transactions of the Congress.

9. The expenses of the Congress shall be divided between the participating societies in proportion to their membership.

10. The admission of new associations to participation in the Congress shall be by unanimous vote of the executive committee.

FIRST DAY—Evening Session.

Professor REGINALD H. FITZ, of Boston, read a paper on "The Treatment of Intestinal Obstruction," followed by one on the same subject by Professor N. SENN, of Milwaukee.

The subject of this paper was the diagnosis and medical treatment of the acute internal, mechanical varieties of intestinal obstruction. The only causes recognized were strangulation from adhesions, vitelline remains, peritoneal slits, pockets, and rings; intussusception, twists and knots, abnormal contents, strictures, and tumors. The evidence presented resulted from an analysis of 295 cases collected from medical literature since 1880.

Professor SENN first directed attention to irrigation of the stomach as practiced by Kussmaul. He said the mechanical effects of such a measure were limited to the segment of intestine below the ileo-cæcal valve. Experiment and clinical experience united in demonstrating the fact that the ileo-cæcal valve is impermeable to fluids. Why should we use fluid in attempting the mechanical correction of a mechanical cause below or above the ileo-cæcal valve? Again, all efforts at overcoming the ileo-cæcal valve by rectal injections result in serious injury to the distended colon. Why, said he, should we not for diagnostic, and more particularly for therapeutic, purposes, resort to the lightest, the most compressible, substance known—hydrogen gas, perfectly harmless, non-toxic, non-irritant? Experiment has shown by means of a manometer that a pressure of one-fourth of a pound to two pounds to the square inch is adequate to force hydrogen gas from anus to mouth; consequently the alimentary canal is permeable to hydrogen inflations. This means of investigation would show that it requires a pressure of from eight to twelve pounds to produce a palpable injury to any of the coats of the intestines; but when fluids are forced beyond the ileo-cæcal valve the surgeon invariably finds on post-mortem examination longitudinal rents in the serous coat. When the hydrogen gas is forced from anus to mouth no tangible injury has been produced anywhere.

Enterotomy, so frequently practiced in

the past, he hoped had become obsolete. He meant Nelaton's operation. It is true, distinguished surgeons of to-day favor enterotomy in cases of acute intestinal obstruction in all instances where they are unable to ascertain the seat and character of the obstruction. They believe that, for the time being, an outlet for the accumulating intestinal contents places the intestinal canal in a favorable condition for subsequent radical measures.

Colotomy is indicated in all cases of intestinal obstruction below the ileo-cæcal region, where the obstruction has been caused by conditions beyond radical measures, or the general condition of the patient does not warrant the most serious operation of abdominal section.

Lumbar colotomy is an obsolete operation—in fact, scarcely any surgeon will attempt to make an extra peritoneal colotomy, in these days of safe abdominal operations. In cases, for instance, of cicatricial contraction, of harmless obstruction, unattended by indications of gangrene or perforation, the surgeon can safely make the obstruction harmless, and at the same time more efficient by resorting to enterostomy. Instead of spending an hour or an hour and a half in the process of suturing, as practiced in Europe, the surgeon can by a simple device unite the bowel above and below the seat of obstruction by approximation with perforated decalcified bone plates, more especially in cases of inoperable obstruction, where carcinoma and sarcoma have gone beyond their legitimate field and beyond the surgeon's reach.

DISCUSSION.

The PRESIDENT called upon Professor William Pepper, of Philadelphia, to open the discussion, but he declined in favor of Mr. Arthur Edward Durham, of London, England.

Mr. DURHAM said he desired, at the outset, to express the pleasure he felt in coming here amongst his American confrères and meeting with such a cordial reception.

The subject of intestinal obstruction was not altogether strange to him. There is no class of cases more dangerous, more serious, and which more urgently call for prompt, skillful, surgical treatment than cases of intestinal obstruction. He could most cordially agree with Dr. Senn that a surgical operation should be performed as soon as the diagnosis was made; but it was exceedingly difficult to make a diagnosis in such cases. In fact, he knew of no class of cases in which the diagnosis was more difficult, and he would venture to go a step farther, and say he had seen cases from time to time in which the surgeon was justified in operating before the diagnosis was made—in other words, to operate in order to establish an accurate diagnosis. The difficulty lies in knowing what the cause of the obstruction is, and locating its seat.

With regard to the observations made by Dr. Senn, and his suggestions as to treatment, he came to America to learn and confessed that he had learned a great deal in many places, and in many ways. Insufflation with hydrogen gas was something new to him. He would like, therefore, to ask Dr. Senn what would happen in case the patient was blown up. He supposed Dr. Senn would call it a case of "blow up" then. He could not see why hydrogen gas on account of its particular lightness should be better for insufflation than ordinary air. This he had yet to learn.

Turning to the treatment. The first thing is to determine, if possible, the seat of the obstruction. In cases of acute intestinal obstruction in which it is evident, or which we have reason to believe, that the obstruction exists in the small intestine, he believes the proper treatment to pursue, when the symptoms are severe and urgent, even though an absolute diagnosis is not made, is to open the abdomen, search for the cause, and relieve it as best we can. On the other hand, when the indications are that the obstruction is in the large rather than in the small intestine, there is not the same degree

of urgency, at any rate in a very large proportion of cases, and the procedure to be adopted must depend upon the seat and cause of the obstruction. In this connection he would venture without the slightest degree of hesitation to take issue with Dr. Senn. He (Senn) stated that lumbar colotomy is an obsolete operation. Now, he would beg to say it is not obsolete; it is an operation that is performed constantly day by day in Europe. He would endeavor to do the operation in any case in which he had occasion to do so. He had dealt with cases in which he had not done the operation, and for which he had a lasting regret that he did not do so; therefore, he would unhesitatingly say that the operation of lumbar colotomy is not obsolete. Had time permitted he could quote any number of cases in which after its performance the intestinal obstruction had been relieved, the colotomy wound healed, the patient gone about and doing well.

Dr. WILLIAM MILLER ORD, of London, England, said he supposed he had been called upon as a physician to express the general inadequacy of that part of the profession to deal with the subject under consideration, for it usually fell to the lot of the surgeon rather than that of the physician to deal with such cases. The physician is called early in the case; and in looking back over a good number of cases of intestinal obstruction the function of the physician mainly ceased when he has come to the conclusion that the case on the one hand is what has been called by our American confrère (Senn) "dynamic" or mechanical obstruction. He thought there was a good deal of difficulty attending the diagnosis, so much so that in some instances there is absence of indication of local pain, of fever, or of anything like bloody discharge from the bowel, that one hesitates as to the decision. Perhaps the members of the Congress would think him a little wanting in self-reliance if he should adopt the views of the first speaker (Fitz), rather than those of the second (Senn) and Mr. Durham,

and claim a little time. He thought physicians had seen a good many cases of intestinal obstruction in which there had been either the simple absence of the passage of the fæces, or there had been a good deal of pain and vomiting, where everything pointed strongly to intestinal obstruction, yet where no tumor nor any amount of tenderness could guide one as to the exact locality of the obstruction; that in some cases the use of opium or other narcotic, or the use of injections, had been followed by complete relief. He had been present on several occasions when a man had been examined over night with an obstruction, where the physician could find no definite sign of any local obstruction, and where he had arranged with the surgeon and his assistants to come the next morning to operate, and where either from the influence of narcotics or injections, shortly before the operation was to be performed, nature had given relief. He would agree with all the speakers that when there was satisfactory evidence that a mechanical obstruction existed, sooner or later the case must go into the hands of the surgeon, and the delay should be only a reasonably short one.

Professor ANNANDALE, of Edinburgh, Scotland, regretted to say that he had only heard part of the papers and discussion, and was therefore unable to deal with the subject in a methodical way.

In the treatment of intestinal obstruction it was very important to divide the cases into two classes, acute and chronic. With reference to acute cases, he thought it was perfectly right that everything that medicine could do should be tried, but not tried too long. As soon as it had been fairly tried, say forty-eight hours, and the symptoms are urgent, then he would say the case belongs to the surgeon, and the sooner he opens the abdomen the better.

In regard to chronic cases, he thought the surgeon might wait until the symptoms had become acute, then operate at once.

He had listened attentively to what Mr. Durham had said regarding lumbar colot-

omy. His experience with that operation had been such, and more particularly in cases of cancer of the rectum, that he preferred inguinal colotomy. He meant by this the performance of colotomy in the left inguinal region, because he had found it was not a more serious surgical procedure as regards risk, and was certainly more simple in a large majority of cases.

Professor FITZ had nothing new to add in closing his part of the discussion.

Professor SENN said that all would agree with him in studying English medical literature, text-books, and hospital reports, that English surgeons were exceedingly conservative. The time had long gone by when any theory or method of operation should be accepted as final, safe, and applicable, unless it had been thoroughly tried.

He could assure our distinguished guest (Mr. Durham) that hydrogen gas when injected into the intestinal canal never forms explosive compounds; that atmospheric air is never present in the intestinal canal; that the procedure has been tried more than a hundred times, and has proved thoroughly safe and infallible at the bedside. In one of the first experiments made he had to submit as (a victim) to the experiment, and would never have submitted to such a suicidal thing until its safety had been thoroughly tested on animals.

SECOND DAY.

Professor ROSWELL PARK, of Buffalo, read a paper on "Cerebral Localization in its Surgical Relations." The essay was devoted principally to the surgical aspects of the subject, and omitted consideration of those cases in which operation is dictated by a study of the subjective rather than of the objective features.

Cerebral Topographical Anatomy.—The areas which most concern the surgeon are those which cluster around the fissure of Rolando. A few bony prominences deserve attention in this connection—that at the point of the nose known as the glabella; the external occipital protuberance known

also as the inion; the point of the vertex half way between these two—the bregma; the external angle of the orbit, the tip of the mastoid process, and the lower border of the alveolar process of the upper jaw. The fissure of Rolando has its upper end about five centimetres back of the bregma, but does not run quite in the middle line; its lower end lies about half a centimetre behind the auriculo-bregmatic line, and a little above an imaginary line projected backward from the superciliary ridge; thus, the lower end of this fissure will be found about six centimetres above and a little behind the external auditory canal, or about an inch behind the bifurcation of the fissure of Sylvius. In regard to the convolutions, it must be stated that lesions of the dura-mater overlying motor areas are not always to be distinguished from lesions in the cortex beneath. It is enough for the surgeon that a lesion of some kind can be located with reasonable accuracy. It matters not whether this is an old, irritative lesion, an acute suppurative process between the bone and the brain, or an abscess or tumor of the brain itself. The indication for exploration is just as strong in either case.

When and Where can one Trephine with Safety?—The safest rule is to first apply the trephine over those areas which do not overlie large vascular channels. Afterward, the opening may be extended in any direction, and to any required extent. The greatest hesitation is with regard to opening one of the sinuses. Two dangers attend such an accident: one, fatal air embolism; the other, profuse hæmorrhage. The former danger is almost a theoretical one, and the other may be overcome by plugging the sinus or closing its wound with a fine needle and suture.

Cerebral and Cerebellar Abscess.—Bergmann has shown that abscess of the brain has but one result—death, and that the surgeon's knife offers the only relief. So far as we know, there is no such thing as idiopathic abscess of the brain; it is al-

ways the result of some external wound of the head, or some extension from diseased surrounding bone. The only exceptions to this statement are to be found in the case of pyæmia or tuberculous abscess. The symptoms of deep brain abscess may be divided into three groups, according to causes: 1. Those which are inseparable from indications of suppuration. Such are those disturbances which may follow any deep-seated foreign body. 2. Symptoms of increased intra-cranial pressure and of disturbed relations. 3. Special symptoms by which the locality of the disturbance may be ascertained so long as the gray matter is undestroyed; the collection of pus may assume large dimensions, and still no intense motor symptoms appear. Local elevation of temperature over the abscess is a symptom of importance when present, but its absence need not negative a diagnosis, if made on other grounds. Wernicke has stated that there is a peculiar disturbance of speech which points to lesion of the temporal region. This is the confusion of correct with incorrect words. In the general diagnosis of cerebral abscess, it is to be remembered that there usually is a latent period which may continue for an indefinite period. The stage of active symptoms is usually ushered in by more or less headache, slight rise in temperature; local or motor symptoms can only be expected when the abscess is in the motor area of the brain.

Dangers of Operation.—The principal immediate dangers are two—hæmorrhage and œdema. Hæmorrhage from the pia or from the brain-substance is usually readily controlled, but disastrous hæmorrhage may occur from unexpected sources. When there is bleeding a temporary tampon of iodoform gauze may be applied. The dural and skin flaps are laid over this and an absorbent dressing applied. At the end of forty-eight hours this may be removed and sutures inserted.

The second danger, that of acute brain œdema, may be brought about either by

increase of intra-arterial pressure or by obstruction of the venous channels of escape. Under this accumulation the brain becomes more sodden.

The author had collected reports of sixty-three cases, which were presented in summary and in tabular form; seventeen of these terminated fatally, although only five of these deaths could properly be attributed to the operation; fifteen of the cases were abscesses, subdural or subcortical. In eleven cases the lesion was a tumor, exclusive of tubercular nodules. Of cysts, properly speaking, there were twelve. The twenty-five other cases were of a miscellaneous nature. In three cases the true character of the lesion was not revealed during the operation, and was only discovered at the autopsy. In two cases, in which no palpable or visible lesion was discovered at the time of operating, the symptoms which led to the performance of the operation were nevertheless relieved, though nothing but careful exploration was practiced.

Of the sixty-three operations, seventeen were performed by American surgeons. Those who have themselves operated more than once are, with the number of their operations: Macewen, 12; Horsley, 11; Bergmann, 4; Weir, 3; Keen, 3; and Park 3.

Professor CHARLES K. MILLS, of Philadelphia, read a paper on "Cerebral Localization in its Practical Relations." In his introductory remarks, the speaker referred to the fact that from the clinical observation of practical physicians sprang the conceptions out of which developed the science and art of cerebral localization. Allusion was made to the discoveries of Bouillaud, and of Broca, on speech localization; to the announcement by J. Hughlings Jackson, in 1864, that certain convolutions superintended the delicate movements of the hand which were under the immediate control of the mind; and to Hitzig's researches having originated from his observing certain ocular movements

during galvanization of the heads of his patients. Brief reference was made to the history of American work in localization; to the investigations, in 1874, of the New York Society of Neurology and Electrology; to Putnam's discovery that irritation of the white matter beneath definite cortical centres produced movements similar to those caused by irritation of the centres themselves; to the labors of Wood and Ott on the heat centres, and to the light thrown by these investigations upon the mechanism of fever and the action of drugs upon different forms of high temperature.

Trephining for cases of insanity, particularly when guided by the rules of localization, was briefly considered. Two of the recent cases of brain operation, reported by Bennett and Gould and by Macewen, were cited as possibly opening a new field for surgical interference in insanity; the excision of cortical areas as a method of treatment when certain subjective phenomena, such as hallucinations of sight or hearing, can be given a local habitation in the brain.

The practical conclusion was that the neurologist and surgeon must depend upon motor symptoms alone in fixing the site for operation in cases where the motor lesions were definite. When positive sensory symptoms were present, they might sometimes serve to aid in locating more exactly the position for operation, but the data were not sufficient for positive reliance.

The question of morphological peculiarities of the human brain was briefly alluded to as having some practical bearing upon the subject under discussion. The position of the so-called angular gyre and aberrations in the parieto-occipital region were more particularly discussed. Even the fissure of Sylvius, the central and parieto-occipital fissures sometimes present considerable variation; but, as a rule, such aberrations were not confusing in operating on the motor region after the methods of Broca, Thane, and others.

Professor MOSES ALLEN STARR, of New

York, read a paper on "Cerebral Localization in Reference to Aphasia."

It is evident that cerebral surgery has a great future, but is dependent on neurology for its guide. The burden of responsibility for future progress rests upon physicians, for diagnosis must precede operation.

The great discoveries in cerebral localization made in the past have been reached by means of the collection and analysis of large numbers of cases of localized disease in man, rather than through physiological experiment. Future advance must be in the same line. Hence the importance, too much overlooked in this country, of recording carefully every case of cerebral disease. And to be properly recorded it must be carefully examined. This is especially necessary in cases of disturbance of speech.

The history of aphasia presents three epochs: First, that of Broca, in which the fact was established that lesions of the third frontal convolution on the left hemisphere produced aphasia. Secondly, that of Wernicke, in which a distinction between sensory and motor aphasia was drawn, and the former was shown in a few cases to be due to lesion of the first temporal convolution. Thirdly, that of Charcot, in which the four mental elements of speech were carefully separated. Charcot says, "A word is a complexus; in it we can discover, in persons of education, four distinct elements: the auditory memory-picture, by whose means we are able to grasp the sense of words heard; the visual memory-picture, which enables us to comprehend the words written or printed; and also two motor elements—the motor memory of articulation, and the motor memory of writing; the first developed by the repetition of movements of the tongue and lips necessary to pronounce a word, the second by the practice of motions of the hand and fingers necessary for writing." Each of these memories being distinct can be lost. The result is disturbance of speech whose forms vary. The loss of visual memories produces verbal amnesia and word-blindness; the loss of

auditory memories causes word-deafness; the loss of motor memories of writing results in agraphia; the loss of motor memories of pronunciation produces motor aphasia. Individuals differ largely in the degree of cultivation of each of these memories, and hence suffer differently when affected by their loss; *e. g.*, the literary man presenting far more symptoms than a common laborer, when his memories of things read are lost. Another fact of importance is the independence of speech and thought. Aphasics may retain their musical faculties and may sing when they cannot talk. Thinking, though largely done by the aid of speech, is not dependent upon it. We have memory-pictures of the shape, form, or sound and odor of objects, independent of their names, and unless these are intact in the brain the perception of the object does not produce recognition of its nature or use, and does not awaken the memory of its name. The condition termed apoaxia is found, with aphasia, in some cases, but not in all.

Turning from clinical distinctions to pathology, the localization of the various memories necessary to speech was discussed. Motor aphasia is produced by lesion in Broca's centre, or in the tract from that centre to the cranial nerve-nuclei. If it is due to lesion in the latter, it is temporary and accompanied by other local symptoms. The situation of the lesion producing motor agraphia is uncertain. Word-deafness is due to lesion in the first temporal convolution, and is associated with word-blindness when the lesion extends to the supramarginal convolution and angular gyrus. All the cases of pure sensory aphasia in which the lesion was limited to these parts (forty-one in number) were collected, and a chart of the brain was shown to support the localization stated. The condition of apoaxia was shown to accompany lesions situated in or beneath the angular gyrus.

Dr. DAVID FERRIER, of London, England, in opening the discussion on the above papers, said he took special pride

and satisfaction in the fact that this subject had been assigned such an important place in this great gathering of the profession in this country.

He had long cherished the idea that the determination of the function of the brain would in time lead to successful treatment by surgery of some of the most distressing ailments of our fellow creatures. There is a great future for cerebral surgery. While there have been many successes, yet there have been some failures. He alluded more particularly to cases of Jacksonian epilepsy. The discharging lesion had been removed in many of these cases without permanent cure. There is yet much to be learned in regard to the functions of the brain and in regard to the diagnosis of cerebral disease.

Mr. VICTOR HORSLEY, of London, England, described briefly the results of his experiments upon the motor region. He believed that here three functions were clearly represented: First, the representation of the so-called tactile sense; second, representation of the so-called motor sense; third, the great representation of movement. It is found that, morphologically, the large cells in the fourth layer are concerned in the representation of movement, and he could not understand why we should not allot to the small cells in the upper layer the representation of sensation. He had divided the motor region into minute areas, and studied the effects of irritation of these separate areas. He had found that the representation for any part was not limited to one minute portion of the brain, but that there was a focal point where it was strongest, and then it graduated as we passed outward. In his different experiments he had met with certain points of difference. These were attributable to the employment of different species of monkeys. He now uses only the bonnet monkey, and for all practical surgical purposes, the results are applicable to man.

Experiments performed during the past summer had enabled him to prove that the convulsions of so-called Jacksonian epi-

lepsy were solely due to the cortex, and not at all dependent upon the spinal cord, or upon the bulbar spinal system.

Professor ROBERT F. WEIR, of New York, had, since 1883, operated in ten cases of brain surgery—three times for tumor, three for abscess, twice for hæmorrhage into the cerebrum where there was no external injury to indicate its locality, once for epilepsy, and once for cerebral pain.

Professor KEEN has removed a tumor weighing over four ounces, with recovery, and Mr. HORSLEY has removed with success a tumor weighing four and a half ounces from a patient in a state of coma.

THIRD DAY.

The closing session of the Congress was held in the Army Medical Museum.

Dr. BILLINGS, in delivering the President's address, said the prominent characteristics of the great majority of the societies composing the Congress is that their members have, as a rule, been chosen because they have either made some valuable contribution to medical literature, or have in some way rendered aid to the profession; in other words, they are supposed to be men whose labor and thought have not been confined to their own interests, or to those of their own patients. It may, therefore, be assumed that physicians are all interested in medical science, not merely as a means of giving new modes of diagnosis, or of treatment, but also for its own sake, for the sake of knowing and for the pleasure of investigation.

He was here as the representative of the medical department of the General Government, which has need of the best knowledge of all the specialties, and is beginning, in its turn, to do something for each. * Within the last twenty-five years the General Government has, in its turn, done something for medicine and for physicians by founding and maintaining a medical library and museum in Washington, under the direction of the Medical Department of the Army.

The necessities of modern progress in anatomy, physiology, and pathology, have led to the creation of medical museums in all parts of the civilized world. In most of the continental capitals these are connected with universities supported by the state. The medical museum should possess a series of specimens showing the normal anatomy of the domestic animals, or of animals used in experimental pathology, pharmacology, or physiology, as a basis for comparison with abnormal or pathological specimens derived from the same animals.

Elaborate dissections under alcohol, mounted in opaque dishes with flat glass covers, and sections of frozen bodies similarly mounted, are what the student and practitioner most desire to see. In our museum there are some excellent specimens of this kind prepared under the direction of Professor His of Leipzig, of Professor Cunningham of Dublin, and by our own anatomist, Dr. Wortman. The annual appropriation for the museum at present is \$5,000. This is sufficient, except that the printing of the catalogue must be an extra charge; but the medical profession should see to it that the amount is not reduced in the rhythmic spasms of partial economy with which some of our statesmen are afflicted.

Speaking in behalf of the Army Medical Department, and for the dead as well as for the living, who have been charged with this work, he could truly say that they had been very proud of their charge, and that they had done their best to make the museum and library such as a great profession and a great nation have a right to demand.

At the conclusion of the address a reception was given to the members and guests of the Congress and their ladies.

ASSOCIATION OF AMERICAN PHYSICIANS.

Professor W. H. DRAPER, of New York, delivered the President's address, and

offered some reflections upon the relation which scientific and practical medicine bear to each other.

He said: We may differentiate the science from the art of medicine, but we cannot practically dissociate them. In their ideal union they are interwoven like warp and woof, built into each other like foundation and superstructure. Scientific medicine, to be sure, is not always practical, but it is ever striving to become so; and practical medicine, though not always in a strict sense scientific, is constantly tending to that end. In medicine, perhaps less than in any other department of human activity, has the distinction between the art and the science been sharply drawn. In spite of this close mutual relation, the worker in the science and the worker in the art occupy essentially distinct positions, and the aim and the methods peculiar to each must be constantly kept in view. The one is a naturalist, the other an artsman. The tendency is to accentuate the distinction. The obvious results of this specializing it is hardly necessary to point out. The observations of the physician have not only suggested to the scientist some of the most interesting problems in biology but some of the most important factors in their solution.

Dr. W. W. JOHNSTON, of Washington, read a paper entitled, "Geographical Distribution of Typhoid Fever in the United States."

The paper was based largely upon the answers returned from three hundred and fifty physicians in various parts of the country, and colored maps showing the distribution of typhoid, and of malarial fever were exhibited. Dr. Johnston's conclusions are: 1. That typhoid fever has a much wider distribution in this country than is accepted by the majority of medical men, and that its prevalence is very great in all of the regions reviewed in the paper. 2. That the varieties and modifications of type are very numerous, covering a wide range, and simulating types of mala-

rial disease. 3. That the prevailing type is without many, sometimes without any, of the more characteristic symptoms of the disease. 4. That the principal direction in which clinical study can be useful in the present stage of our knowledge is in the collection of cases of undoubted typhoid fever; cases in which the diagnosis is made certain by characteristic symptoms, especially by post-mortem examination, in which there have been phenomena supposed to show malarial infection. 5. By the study of the localities of occurrence of such cases, by the finding of them, perhaps, in non-malarial regions, by the study of the blood and stool micro-organisms. 6. That no true progress can be made until the true value of the malaria-like symptoms are determined.

Dr. JAMES H. HUTCHINSON, of Philadelphia, read a paper on "The Management of the Stage of Convalescence in Typhoid Fever."

With the return of the normal temperature, the physician is prone to overlook the danger. The authorities differ greatly as to the rules laid down for the management of this stage, some advising the administration of solid food so early as the second day after the cessation of the fever; others not until a week or ten days have passed. Dr. Hutchinson favors the continued use of the milk diet, with a little milk-toast, and at the end of two weeks butcher's meat. The only objection to be urged against the milk diet are the wishes of the patient and the tendency it occasionally has to produce constipation.

The administration of alcohol may be withheld in many instances; but, on the other hand, it may, for the first time, become necessary, and no doubt convalescence is often very much hastened by its use.

Dr. PEABODY, of New York, in opening the discussion, stated that he did not believe that errors in diet were so frequently the cause of recrudescence as was formerly supposed. In regard to ulcers as a cause

of diarrhœa, he is of the opinion that their presence has nothing whatever to do with its production, a conclusion derived from the frequent study of cases at the autopsy table.

Dr. ORD, of London, in a general way, agreed with the reader of the paper, but thought that one cannot lay down hard and fast rules. One must be guided, in a measure, by the desires of the patient, and must give in to these desires. He referred to a hospital case which ran the usual course up to a certain period in the convalescence, when there was added a more extraordinary range of temperature for days, with delirium, and an abiding desire for food. The patient had been allowed milk and beef-tea, and for ten days two eggs daily. She was given boiled sole, and within twenty-four hours her temperature was normal, and convalescence was thereafter uninterrupted. We should study the individual as well as the fever.

Dr. KINNICUTT, of New York, remarked that he considered relapse to be very often a result of indiscretion in diet, and that therefore the old way of adhering strictly to a liquid diet was the best.

Dr. GEORGE ROSS, of Montreal, then presented a communication entitled, "Some Forms of Paralysis after Typhoid Fever."

It is not to be wondered at that the nervous system suffers after typhoid. The signs of exhaustion of the nervous system are constant, and generally in proportion to the severity of the fever. The nervous disturbance may be general, or some part of the spinal cord or some one or more of the spinal nerves exhibit altered functions. The nervous phenomena almost invariably are both motor and sensory; always in the case of spinal nerves, never in any of mixed. According to Nothnagel, the order of frequency of these affections is as follows: 1. Parts by one nerve, as the ulnar or peroneal. 2. Paraplegia, preferably of the lower extremities. 3. Less frequently, one extremity, either upper or lower, or two extremities in crossed order.

4. Simple alteration of sensibility. The history of a case of paraplegia resulting directly from typhoid fever, and ending in recovery, was given in detail, and also the history of a case which presented paralysis involving all the limbs and the muscles of the palate.

Dr. FREDERICK FORCHEIMER, of Cincinnati, read a paper on "Fatty Heart."

The paper was based on a collection of one hundred and twenty-two cases—eighty-eight males and thirty-four females—fifty-nine of whom were below sixty years of age and forty above. The relation of obesity to fatty heart was considered, and the difficulties attending the diagnosis of the affection dwelt upon.

Dr. JAMES C. WILSON, of Philadelphia, presented a communication entitled, "Causal Therapeutics in Infectious Diseases."

The paper was based upon an experimental study of the effect of hypodermic injections of calomel in the treatment of five cases of typhoid fever, all severe, and three of pulmonary tuberculosis. In all there was a distinct amelioration of symptoms, and a modification of the temperatures. The drug was given at intervals of four or five days.

SECOND DAY.

Dr. ROBERT T. EDES, of Washington, read a paper on "The Absolute and Relative Value of Albumen and Casts, and of Renal Inadequacy, in the Diagnosis and Prognosis of Diseases of the Kidney."

The term albuminuria has held a place in medical nomenclature, until comparatively recently, synonymous with Bright's disease. The writer referred to recent and most extensive observations on albuminuria. The varieties of albumen were then considered. Dr. Munn's observations were cited to show that many cases of intermittent albuminuria, when followed out carefully, are found to have developed Bright's disease. Four of Dr. Munn's sixty-nine cases died within three years. Many such are met with in

business men of middle-life, and of overweight. The great diagnostic significance of casts, and their variety, was next touched upon. A question of great interest is, whether we can detect a pathological condition of the kidney in the diminution of any of the constituents of the urine. Dr. Noyes' paper in the *American Journal of the Medical Sciences* is of interest in this connection. Long after the presence of kidney disease is established, the daily quantity of urea excreted may be far above the physiological limit. A very badly damaged kidney may, in fact, get rid of a large quantity of urea. Cases in illustration of the fact that the excretion of urea and other solids does not necessarily fall below the physiological limit. The question of food is here of the greatest importance.

Professor JAMES TYSON, of Philadelphia, presented a communication entitled, "The Relation of Albuminuria to Life Insurance."

No system of life insurance is perfect which does not include those who are apparently healthy and those who are not. Certain applicants presenting themselves for examination for life insurance are wrongfully rejected, because of the presence of albumen in the urine. After this introduction the writer went on to mention the different terms used to indicate the particular forms of albuminuria under consideration, and gave his decided preference to the term "functional." He stated conditions which, if observed by competent and well-trained observers, if it were always possible to get such, would enable the companies to save these risks. These are: 1. The applicant must in all other respects present the signs of good health. 2. The albuminuria must be unaccompanied by tube-casts, however perfect may be the health in other respects; albumen and tube-casts conjoined always meaning structural changes. 3. The specific gravity of the urine, that is, the "real" specific gravity (that of the quantity for the twenty-four

hours), should not be lower than 1.015-1.025. Great care must be taken to secure the "real" specific gravity, as it would be unfair, to reject the candidate on account of the specific gravity of a single specimen.

4. The signs of hypertrophy of the left ventricle, and the existence of high vascular tension associated with albumen, would exclude the candidate. 5. The age of the applicant is a highly important consideration. It is doubtful whether any person forty years of age with functional albuminuria should be accepted, unless at least he has been long under the observation of a competent and conscientious examiner. 6. The presence of true gout in any case should decide against the person, because gout is always, sooner or later, followed by interstitial nephritis. Finally, retinal changes, such as are associated with nephritis, should exclude the applicant. In conclusion, the writer does not claim, of course, that we are in a position to put these conditions in operation, but believes, as we are enabled gradually to secure the desired education and training in medical examiners, the applications of these conditions will be possible. The absence of the albumen from the urine passed on rising in the morning is an important aid in the diagnosis of functional albuminuria, but not an essential one.

Professor A. L. LOOMIS, of New York, read a paper entitled, "The Cardiac Changes in Chronic Bright's Disease."

Pathological processes become physiological in that they tend to the preservation of health and the prolongation of life. We have two widely different conditions tending to produce arterial tension—conditions which may act singly or conjointly—and affording a rational explanation of the varying amount of cardiac hypertrophy found in apparently similar renal conditions. First, a general and primary arterial sclerosis, to which both the cardiac and renal changes are secondary; and, second, arterial as well as cardiac hypertrophy, which are compensatory and

conservative, as is cardiac hypertrophy in aortic lesions.

Professor SAMUEL C. CHEW, of Baltimore, Maryland, followed with a paper on "The Relation Between Chronic Interstitial Nephritis and Angina Pectoris."

After stating that there was no systematic account of the relations between the diseases to be found in any of the writers on the subject, he proceeded to consider the question chiefly from a clinical point of view.

Professor J. M. DACOSTA, of Philadelphia, presented a paper on the "Treatment on Valvular Affections of the Heart."

He began with a reference to the prevailing ideas on the treatment of these affections. The presence of a valvular affection is not the key-note to be taken. The indications on which the true treatment should be based are: 1, The state of the heart-muscle and heart-cavities; 2, the rhythm of the heart; 3, the condition of the arteries and veins of the body; 4, probable length of disease; 5, the general health of the patient; 6, the secondary results of cardiac affection.

THIRD DAY.

Dr. EDWARD C. SEGUIN, of New York, presented a paper on "The Relation Between Trophic Lesions and Diseases of the Nervous System."

The author excluded from consideration vaso-motor disorders, and diffused or quantitative nutritional changes, partly because he considers them to be a distinct subject, and partly because their study would be beyond the scope of a short paper.

He divided the so-called "trophic lesions" into two great classes. In one the lesions are probably mostly due to the action of extraneous causes, and are preventable. The second class embraces lesions which seem to be directly due to the nervous disease, and which are its necessary and unpreventable results.

He endeavored to show that lesions of the second class, which alone merit the

name of *trophic lesions*, occur in organs and tissues which are anatomically continuous, and whose life or preservation of structure and function is associated or interdependent.

He concludes that disease of the nervous system produces true trophic lesions when it interferes with the associated or interdependent life of continuous tissues. This proposition he offered only as a partial and preliminary answer to the question under discussion.

Professor HORATIO C. WOOD, of Philadelphia, followed with a paper on the same subject. His propositions and conclusions were as follows: 1. It is physiologically proven that the nervous system directly affects general nutrition. 2. Various lesions are the immediate result of previous nerve disease. 3. In various cases the lesions are not preceded by circulatory disturbance. 4. No known vaso-motor condition is capable of causing many of these lesions. 5. Therefore it is absurd to attribute changes to preceding vaso-motor changes.

Dr. ORD, of London, opened the discussion by stating these so-called trophic disturbances might be produced in three ways: 1, Through disease of the spinal cord; 2, through disease of nerves; 3, in a reflex way. In illustration, he mentioned a case of chronic hypertrophic cervical pachymeningitis in which there was a wasting of the tissue in the digits of the affected arm, and osteo-arthritis; also the case of a man who, through violent exercise, had lost power in his arms, and whose muscles underwent extreme wasting. There was also wasting of the skin. In conclusion, Dr. Ord spoke of the swelling of the joints of women approaching the climacteric. Various other reflex disturbances were referred to.

Dr. HENRY P. BOWDITCH, of Boston, considered that much might be gained by studying the subject on simpler lines; that therefore it would be well to limit the question to a consideration of its relation

to muscles, for in muscles we have not two sets of nerves anatomically distinct, at least such are not demonstrable; we have not the "anabolic" and "katabolic" or "metabolic" nerves. It were better to confine the term "trophic" to nitrogeneous metabolism of muscle.

Dr. FERRIER, of London, said that the nervous system has a direct influence on the nutrition of tissue altogether apart from vaso-motor influence. The influence of nerves is amply demonstrated in the case of muscles; whether it be in case of the skin is not so certain. Possibly there are centres which preside over nutrition. It is an interesting question whether there are "trophic" nerves apart from motor and sensory.

Mr. VICTOR HORSLEY, of London, called the attention of his hearers to the recent and interesting investigations of his friend, Dr. Frederick Mott. To Dr. Mott belongs the credit of being the first to show that atrophy is a true active dis-trophy and not a mere passive change. By cutting of the cauda equina he demonstrated an atrophy of the femur. The whole of its inner surface was lined with osteoclasts.

Dr. FRANCIS T. MILES, of Baltimore, next read a paper on "The Effect of Concussion of the Spine on the Reflexes."

Dr. W. H. WELCH reported the results of experiments relating to the thyroid gland of the dog performed by Dr. W. S. Halsted in the Pathological Laboratory of the Johns Hopkins University. Extirpation of both lobes of the gland of the dog was found to be uniformly fatal in from two days to three weeks, with symptoms similar to those noted by previous experimenters. A large number of experiments were performed to test the remarkable statement of Munk that these symptoms and the fatal result are not due to the loss of the thyroid gland, but are referable to some undefined injuries attending the operation of removal. Munk found that eight dogs survived the isolation of the

gland by ligation of all the arteries and nerves entering it, provided the wound healed by first intention. In the experiments reported by Dr. Welch, with strict antiseptic precautions, the two lobes of the gland were isolated and all their vascular and nervous connections ligated. Under these circumstances the gland underwent coagulation-necrosis, and although in eight cases primary union of the wound was obtained, the animals died with the usual symptoms of extirpation of the entire gland. These results, therefore, are directly opposed to those reported by Munk.

Dr. T. MITCHELL PRUDDEN exhibited a set of microscopic specimens of myxœdema.

Dr. E. O. SHAKESPEARE, of Philadelphia, exhibited photo-micrographs of various micro-organisms.

Dr. JACOBI, of New York, read a paper on "The Pathology of the Thymus Gland."

Because of the great length of the paper only a few extracts are given. The literature of the thymus for the last ten or twenty years treats more of its histology and embryology than of its pathology. The author referred to the fact that there is no certain size of the thymus; that, indeed, a great many different sizes and weights have been taken to be normal by different writers. Dr. Jacobi referred to the very doubtful connection between an alleged hypertrophy of the thymus and a so-called laryngismus stridulus. Still he admitted there are a few cases in which the sudden death of infants could not be explained any better than by the hypertrophy of the gland. Briefly he alluded to inflammations and suppurations of the gland, and to the occurrence of punctated or larger hæmorrhage into the tissue, and to the occurrence of malignant growths in the organ. Among them he mentioned endothelioma, lymphoma, fibroma, sarcoma, carcinoma, and myxoma, which have been described; the majority of them, however,

are decidedly doubtful, particularly because it can be proven that a number of these pseudo-plasms did not originate in the thymus, but in the thyroid gland, or in a neighboring lymphatic gland. For the last eight months he had given his particular attention to the study of the thymus, with regard to tuberculosis, syphilis, and diphtheria. The material for the microscopical studies has been gathered from different institutions in New York City. These microscopical examinations were made by Dr. Henry Koplik, in the Laboratory of the College of Physicians and Surgeons. A few of the conclusions arrived at in regard to tuberculosis are as follows:

In cases of tuberculosis of the thymus here presented, tubercle tissue appeared in the following forms:

1. As miliary tubercles, composed entirely of small, round, or polygonal cells, with a reticulum basement substance in the recent state. In the later stages these miliary tubercles or granula may, at their centres, undergo cheesy metamorphosis (coagulation necrosis).
2. Miliary granula are also found which show, in their centres, the presence of giant cells.
3. Large, cheesy areas, in the periphery of which we still find miliary tubercles, of granula, composed of giant cells, around which are arranged spheroidal or polygonal cells in a fine reticulated basement substance.
4. In all cases the arteries of the adjacent areas of the thymus tissue were the seat of a typical endarteritis (in some cases obliterating) of a tubercular character.
5. A very careful and painstaking examination of the above forms showed tuberculosis present in all cases. In most of the above forms we had also the presence of the bacillus in the walls of the arteries and arterioles undergoing tubercular changes, and the lumen of the vessels was the seat of obliterating changes.
6. In the thymus, tuberculosis may

appear simply as so-called tubercle tissue, an infiltration of the tissue of the gland or organ with spheroidal or polygonal cells, held together by a delicate basement substance; this tissue has no characteristic arrangement; the arteries in such areas may be the seat of obliterating processes. In all of the cases examined by us there were present the characteristic bacillus tuberculosis.

Syphilis results in the thymus in two changes, both in the accumulation of hyperplastic connective-tissue, and, as in one case, in the formation of a gumma. Diphtheria results in general parenchymatous degeneration.

Finally, persistent thymus, found in a man, aged twenty-six, was made the subject of extensive studies, and it was discovered that retrograde metamorphosis was in full progress; the parenchyma being in a condition of fatty degeneration, and the stroma being replaced almost entirely by fat tissue.

The time allotted to the paper was mostly taken up by the demonstration of frozen sections illustrating the normal topography of the thymus; also of photographs of the same, and of microscopical drawings of the pathological changes.

Mr. F. S. EVE, of London, made some remarks on the work of Mr. A. Lingard and himself on "Syphilis," an account of which work was published in *The Lancet* of April, 1886. The bacillus found during their investigations they do not claim to be the specific germ of the disease. Mr. EVE also spoke on the tubercular origin of lupus, and referred to studies of his own in this direction. In one instance he succeeded in producing lupus in a rabbit by inoculation of tissue from a case of the disease.

Dr. WILLIAM T. COUNCILMAN, of Baltimore, presented several microscopic and macroscopic specimens illustrating bovine tuberculosis.

Dr. GEORGE M. STERNBERG, U. S. A., owing to the lateness of the hour, did not

read his paper on "Recent Researches Relating to the Etiology of Yellow Fever," but described the method followed in these researches, which were carried on at Havana, and stated that he had not arrived at any definite result as to the specific etiological element of yellow fever. He had made many cultures from the blood of persons just dead of this disease, as well as from the liver, kidneys, and urine. The results were negative as regards those made from the blood and urine. From the kidneys and liver numerous organisms were obtained, but in no instance did he obtain the micrococcus of Freire. Various tube cultures were shown.

THE AMERICAN SURGICAL ASSOCIATION.

The Association was called to order by the President, Professor D. Hayes Agnew, of Philadelphia, who delivered an address on "The Relation of Social Life to Surgical Disease." He said there is no tyranny more exacting or despotic than that exercised by the conventionalities which govern our living. All stages of life from infancy to old age are under its domination. It dictates the education, the manners, the walk, the dress, the forms of speech—in fine, the whole being. Beyond all contradiction the behests of fashion are vastly more influential in governing public conduct than any arguments drawn from the teachings of structure and function. As a rule, when the conflict is between taste and reason, the victory will be on the side of taste. In nothing is this more forcibly displayed than in the apparel used to protect the body.

Let me name a few examples as illustrative of my subject. For some time the profession has been speculating on the causation of "Nasal and Post-Nasal Catarrh," with its accompanying auditory defects, the growing frequency of which cannot have escaped general observation. Doubtless no single agency will explain the presence among us of this unpleasant

disease, yet there are facts connected with this affection which to me are very suggestive. I cannot recall an instance in which I have met with the disease among females belonging to the society of Friends, Dunkards, or Mennonites. If this, on more extended observation, proves to be true, may not the head-dress peculiar to these people be accepted in explanation of their exemption. The bonnet which at one time overshadowed the entire head, as all know, has been gradually shrinking in its dimensions, until it has become a mere shadow of its former self, and offers no protection whatever to the head. As a substitute, I would not insist upon the quaint headgear of the Friend, though I believe that any modification which will protect this part of the body will lessen the tendency to catarrhal inflammation of the naso-pharyngeal mucous membrane.

Muscular Restraint.—A legion of physical imperfections arises from muscular restraint. Among these may be mentioned weak ankles, narrow or contracted chests, round shoulders, projecting scapulæ, and lateral curvature of the spine. The foolish concession to appearance and the unwise partiality of parents for enforced systems of education, the demands of which bear no just proportion to the capacity of the infantile mind, constitute the initial or determining force of these physical imperfections. In many cases the weak ankles of children, characterized by eversion of the feet, thus allowing the superincumbent weight of the body to be transmitted to the latter inside of the proper centre of support, is largely chargeable to the miserable practice of placing on the little ones, long before they are able to walk, boots tightly laced up the limb some distance above the ankles. The confinement of the flexor and extensor muscles by this constriction prevents that free play of movement which reacts so favorably on all the elements of an articulation, and that, too, at a time when the growing forces are at full tide, so that when the time arrives for standing and

walking, the muscles are unequal to the firm support of the joint. The consequence of this feebleness is soon seen in the turning outward of the feet, throwing the strain on the internal lateral ligaments, which in turn become elongated through growth, and thus the defect becomes established; but the evil does not terminate here. The calcaneo-cuboid and the astragalo-scapoid ligaments, losing the proper support of the tendon of the posterior tibial muscle, under the abnormal tension begin to yield, and to the deformity of eversion is added that of "flat-foot." That the above is not a mere hypothetical explanation of the ankle defects I have many times verified by finding the threatening symptoms disappear after liberating the imprisoned muscles and subjecting the enfeebled parts to a judicious massage. Under no circumstances, as is too often the case, should instrumental apparatus be applied, unless in cases in which, from neglect, the deformity is thoroughly established and is progressive.

Take another deformity, that of bow-legs. On the earliest signs of the unsightly curve, the limb is too often trammelled with irons, and the growth of the muscles arrested, when it is well known that if manual force be systematically applied two or three times a day the limbs will gradually assume their typical form.

Again, in further illustration of our general text, take, as an example, a child who for one long or two short sessions, for six days of the week, sits over the study desk, compelled to assume a position in which, from the inclination of the body, the shoulders fall forward, the head being supported, most probably, on the elbows and hands. In such a posture, the great serratus and pectoralis major and minor muscles are in a state of relaxation, while the erector spinæ and trapezei muscles are in a state of tension. This change in the position of the shoulders gives the scapulæ over, without antagonism or resistance, to the action of the rhomboidei and the leva-

tores angulæ muscles, which, acting conjointly, cause that projection of the lower angle of the shoulder-blades which the older anatomists termed "scapulæ alatæ." To all this must be added the very important factor of four to six hours in the school-room, and two hours, at least, of home preparation for the following day's recitations, during which time the respiratory functions having been reduced to a minimum of activity, the muscles of the chest are comparatively passive and aëration of the blood tardy. Certainly no combination of conditions could be better devised for forming contracted chests and round shoulders. It is not long before the watchful eye of the mother detects the change in the figure of her child. She will probably discover this and take alarm, even when the pale face, the languid air, and the capricious appetite of the child cause no anxiety; and then comes the second act in the drama of physical deterioration, namely, a resort to shoulder braces and stays, in order to accomplish that which the muscles should be taught to do without restraint or incumbrance.

Lateral Curvature.—While it is true that lateral curvature of the spine depends upon causes both central and peripheral, yet in no small number the deformity is clearly attributable to influences of a social nature. The young column, by reason of the non-union of the epiphysis and diaphyses, and the supple character of its ligaments, is extremely flexible. Whatever, therefore, destroys the muscular equipoise, however inconsiderable the force, if persistently repeated, changes the centre of gravity and develops primary and compensating curves. For six months in the year, any fine morning, groups of young children may be seen plodding along our streets with a miniature library of books suspended from one shoulder. To the already preponderating scale of the balance, add the additional factor, a probably badly arranged light, compelling these little *savants* to assume a lateral inclination of the

body in order to obtain the necessary illumination of the subjects of the study, and you have all of the conditions necessary for perpetuating the lateral deformity.

Bodily Constriction.—In the further discussion of my subject, I may next notice the evils of visceral displacement and pressure consequent on abdominal constriction.

The evil effects of this constriction on the viscera of the abdomen and pelvis is most strikingly witnessed in the embarrassed portal circulation, in the different uterine displacements, elongation of ligaments, displaced ovaries, tubal inflammations, hæmorrhoids, hernia and other morbid conditions which either prevent or disqualify the woman for the exercise of those functions of maternity, and which, in addition, through reflex influences, entail a host of functional disorders, reaching into every avenue of the body and invading both the mental and moral constitution of the victim. So prolific have these infirmities become that a new department of surgery has been organized for their special management. To what, if not to social causes, can these morbid changes of structure in the pelvic organs, especially of the uterus and its appendages, be attributed? Why should laceration of the cervix uteri be so common an accident? Labor is a natural process, and ought not, under ordinary circumstances, to be attended by lesion of uterine tissue. I can conceive of no agency more likely to induce that muscular degeneration which predisposes to this accident than the modes and methods of modern living, especially among the inhabitants of great cities. In the expression "modern living," much is embraced. It includes culinary pharmacy, overfeeding and drinking, insufficient or injudicious exercise, improperly heated apartments, and a disproportion between the hours of exercise and rest.

Contrast, if you will, the muscles of the hardy, country housewife, who, bearing the cares and responsibilities of a dependent

family, bustles about the live-long day indoors and out-of-doors, eats with a relish her plain and simple fare, repairs at reasonable hours to bed, and sleeps the sleep of the beloved, undisturbed by dyspeptic nightmares, and rising with the golden dawn, resumes the round of domestic toil with a clear head and supple limbs; I say, contrast this type of a class with that of another, the woman born to luxury and ease, whose capricious and exacting taste taxes the art of the professional caterer, who drags out the morning hours toying with some crazy piece of embroidery or trashy novel, lunches at one, rides out in the afternoon for an airing of two or three hours, returns to a dinner of five or six courses at seven, completes the evening at the opera, the theatre, or the assembly, and coming home after midnight, crawls into bed weary and exhausted in body and mind, only to rise, with the best hours of the morning gone, for another day of aimless routine life. Can it be doubted that in the first case, with a digestion unimpaired, with the products of textural change consumed by functional activity and eliminated through the proper emunctories, the woman should possess a vital resistance and a tone of tissue altogether superior to that of the other, whose habits of living must necessarily favor their faulty metamorphosis?

To these same agencies must be attributed that brood of nervous and hysterical evils, for the relief of which the gynæcologist too often, I fear, invades the domain of womanhood, around which her whole sexual nature revolves, and which, save only in the direst extremity, should be sacred against all operative intrusion.

Late Marriages constitute another social evil, the penal inflictions of which involve both sexes alike. Pride and luxury determine long engagements or deferred proposals. Marriage, it is believed, necessarily involves an establishment, a display, a retinue of servitors. The good old notion of two souls being united in wedlock for

the purpose of being mutual helpmates and patiently, together, working up from modest beginnings to affluence, seems to be entirely at variance with the modern idea of this relation. In the meantime the young man is betrayed into unlawful sources of gratification, alike destructive to moral and physical purity, the pollution of which incontinence is often subsequently communicated to and perpetuated in wife and offspring. I would not dare to say how many cases of this nature had been intrusted to my professional confidence, though I doubt not my experience does not differ from that of many of my professional brethren whom I address. It is under such circumstances that many of those infective inflammations of the Fallopian tubes, as salpingitis and pyosalpinx, arise, which entail the most serious deterioration of health.

The Foot and the Shoe.—It may be thought by some persons that the subject of the foot and the shoe is not of sufficient dignity to appear in a public address. The Romans and the Greeks thought differently. The literature of both people is full of references to the shoe worn by both sexes. So important, indeed, are the feet to the well-being of the body that whatever impairs their usefulness, either for support or locomotion, becomes a positive calamity. Nothing can be more unlike the human foot than the modern shoe. Let anyone leave the impress of his or her foot in the wet sand of the seashore, and then place alongside of the imprint a fashionable shoe; that the two were ever intended for each other would scarcely strike a child of the forests. The North American Indian entertains juster notions about clothing this portion of his body than does the civilized denizen of New York or Philadelphia.

Games and Amusements which in themselves are proper and praiseworthy, too often become developed into a craze, working both moral and physical mischief. Professor Leuf, himself a professional in

the national game of base-ball, has described the "pitcher's arm," a condition of over-taxed function, and one in which all the anatomical elements of the upper arm are involved. There is also the tennis arm, and the swollen supersensitive prostate of the bicyclist, both due to the abuse of popular amusements.

Defects of Refraction, or visual defects, constitute another class of affections fairly attributable, in many instances, to social influences. The number of children which may be seen in our streets any day wearing glasses has become a matter of common observation. It is far from being probable that the most exquisite piece of mechanism, the human eye, came from the Divine Artificer imperfect. Because eyes are young, it does not follow that they are thereby better fitted to sustain prolonged use. Just the reverse is true, and it is high time that parents and educators begin to recognize the fact. The power of the eyes for continued use, like that of other organs of the body, is one of gradation. It moves in the general procession and strengthens with the advance in life, until development has attained its zenith. Not only so, but the eye being a part of the body it must suffer or rejoice through the operation of general causes. A bone may have its normal curves changed, a tendon may slip from its appointed groove, or a blood-vessel be destroyed, and yet very little disability be realized, but the eye is made up of such extremely delicate structures, and acts according to fixed physical laws, that not the slightest alteration of a curve, or the mobility or density of its media, can occur without great vitiation of function. To exact, therefore, long hours of study from children of a tender age, involves a degree of functional strain altogether disproportionate to the structural resources of the organ, and, by disturbing the orderly processes of nutrition, gives rise to hypermetropia, asthenopia, astigmatism, and its companion, headache. That the picture is not too highly colored,

or the sensation over-strained, we have only to contrast the children born and reared in those portions of the country not too much dominated by the methods of modern civilization, and who rarely demand a resort to artificial aids to provide for abnormalities of vision. The only remedy for the evil, where infantile scholarship is insisted upon, is the Kindergarten, or object system, the most natural and effective plan of impressing the young mind.

Renal Disease.—Is there any reasonable explanation drawn from sources of a social nature for the great frequency of these renal disorders, which come more particularly under the care of the surgeon, as crystalline deposits and calculi? For maintaining the general health at the highest physiological standard, a proper quality of food and the proper disposal of tissue waste are essential conditions. Along with wealth and luxury come the abuses of the table. Americans are fast becoming a nation of dyspeptics. Our country is so rich in the products of every zone, that nowhere else in the world can you find such a variety of foods, animal and vegetable. These foods, manipulated in a thousand ways by the subtle art of the professional cook, almost necessarily betray one into excess, and also create the desire for wine and other alcoholic beverages to aid the stomach in disposing of its plethoric supply.

In great cities, which furnish relatively the largest number of cases of renal disease, affecting pre-eminently the mercantile and sedentary classes, we find just the conditions favorable to their development. The competitions of trade keep the merchant always at white heat. Time is golden, and the street-car and other means of conveyance annihilate distance, and the ride is substituted for the needful walk. A hasty lunch at the most convenient restaurant satisfies the inner man until the business of the day is closed, when, weary and worn, he is driven to his home to partake of a course dinner, the balance of the

evening to be spent on the lounge with the evening paper, or the latest periodical. To the literary man the fascinations of the study and the library charm him away, with their siren voices, from the fields and the highways, until bodily exercise grows distasteful and repugnant. In the meantime there has been no provision made for the waste or tissue metamorphoses of the body through that great agency, exercise. These accumulate in the blood, the internal eliminating organs, of which the kidneys are chief, are overtaxed, and then follow the evils of malassimilation and of excretion, in the form of urates and oxalates, often resulting in the formation of calculi.

In conclusion, may we ever hope for a time when the race will realize that these bodies which we wear, which God has so highly honored by his own incarnation, are sacred temples to be kept in harmony with recognized physical laws, and not to be made instruments of mere animal gratification.

Professor JOHN ASHHURST, of Philadelphia, read a paper entitled "A Contribution to the Study of Excisions of the larger Joints."

It was based upon the records of 120 cases occurring in his own practice, in which excision of the larger joints had been required, embracing ten of shoulder-joint; nineteen of elbow-joint; forty of hip-joint; fifty-one of knee-joint, and six of ankle-joint excisions.

The large majority of the excisions had been performed without any of the so-called "antiseptic precautions," and the wounds had been dressed with simple oiled lint, or with lint saturated with dilute alcohol. For more than a year past, however, he had employed the antiseptic method in almost all his large operations, using also antiseptic dressings in their after-treatment, and with benefit; though as regards the ultimate welfare of the patients he has not noticed any gain. His best series of consecutive successes had been obtained under old methods, and he

had not obtained any diminution of mortality by the adoption of the new. At the same time he had seen no ill results which could be attributed to the use of antiseptic measures; their use shortens the period of convalescence, and they have the merit, on account of the infrequent change of dressings needed, that they greatly lessen the surgeon's labor.

Professor F. S. DENNIS, of New York, called attention to cases of excision of knee-joint for disease beginning in abscess in the condyle. In these cases the abscess cavity breaks down after recovery, leading to the production of deformity. In these cases he takes away all of the abscess-cavity, saws away a corresponding piece from the tibia, and brings the oblique surfaces together.

He has been in the habit of employing antiseptic dressings, removing the drainage-tube on the third day, allowing the first dressing to remain five or six weeks.

In excision for injury, only enough bone to allow of free drainage should be removed.

Sir WILLIAM MACCORMAC, of London, England, had heard with some surprise that the tendency seemed to be to postpone excision of hip-joint until all other measures had failed. This is not the practice in regard to any other joint. In England the disposition is to perform the operation at an earlier period. Another point that he had not heard mentioned in the paper was in reference to the performance of operation in cases of old dislocation of the joint. He had performed this operation with success in old hip-joint dislocation, and reported the case of a sailor coming under observation three years after the occurrence of dislocation of hip-joint which had not been reduced. After the operation he could use the limb perfectly. He had been much interested in the recommendation of Dr. Ashhurst that a long incision be made to reach the subcrural bursa, a suggestion which he had not heard mentioned by any other surgeon.

Dr. E. M. MOORE, of Rochester, had been somewhat surprised to hear a certain amount of indifference expressed toward the use of antiseptic surgery. He had found in his practice the greatest improvement follow the use of antiseptic dressing in these cases of excision. He cited several cases showing the result obtained.

Professor JOHN E. OWENS, of Chicago, agreed to the value of the wire cuirass, and referred to a modification of this apparatus, consisting in the substitution of a frame of gas-pipe conforming to the outlines of the body. On this the body is supported by means of flannel stretched between the two sides of the frames. Extension may be applied, if desired, by the use of adhesive plaster, counter-extension being provided for by elevating the foot of the frame. After keeping patients in bed for thirty days, he tries to get them into the open air. He had found great advantage in keeping up a certain amount of extension after the patient was allowed to get up. By removing pain this enables the patient to move the joint more freely, and thus tends to far greater mobility of the part. He thought that there was no comparison between the antiseptic methods and those formerly employed.

Dr. F. LANGE, of New York, referred to a class of cases in which the disease of the hip began in the tissue outside of the joint, the articulation becoming involved at a later stage of the affection. In these cases he recommended early operation with the hope that in this way necessity for opening the joint would be avoided.

Professor NICHOLAS SENN, of Milwaukee, read a paper on "The Relation of Microorganism to Injuries and Surgical Diseases."

At the present time no argument is required to show that many special conditions are due to the presence of bacteria. In regard to the so-called hereditary transmission of disease, the author held that the specific microbes of the specific diseases are transmitted directly from parent to

child. In evidence of this he referred to cases of so-called hereditary osteomyelitis in newly-born infants. In other cases, while this same origin may be inferred, we have as yet no direct evidence that such is the case. In regard to the question whether or not pathogenic micro-organisms exist in the healthy body, while the results of some observers point in this direction, the results of others are opposed to the existence of pathogenic organisms in the healthy body. The conclusion was that under certain circumstances pathogenic organisms might be present. There is proof of this in cases in which, after accidental injury, there is localization of these pathogenic organisms. Acute suppurative infectious osteomyelitis, following slight injury or exposure, was cited as an illustration of this fact. This localization is favored by certain anatomical conditions. The antagonism among micro-organisms was being considered when the time of the author expired.

Professor SENN, in concluding the discussion, said that the diseases enumerated in his paper included only those in which the specific cause had been isolated, cultivated outside of the human body, and in which the injection of this culture produces identical lesions. When these three things are done we have furnished positive proof that the disease is due to specific germs. Another class of diseases had been alluded to in the paper in which there was reason to believe from analogy that the affection was due to specific germs, although the three conditions above referred to had not as yet been fulfilled. So far no one had been able to show that the supposed bacillus of syphilis was the specific bacillus. That it is a specific disease can not be doubted; that it is due to a microbe can not be doubted, but to establish this positively, experimenters must do what Koch did before he announced the specific origin of tuberculosis.

He was firmly convinced from his observations that tumors in the true sense of the

word were not due to microbes. He had made tumor implantations for many years in animals, and in justifiable cases in man, both close to the original seat of disease and at remote points, without obtaining the least evidence of the *microbic origin* of disease.

Professor W. W. KEEN, of Philadelphia, then read a paper entitled "Three Cases of Brain Surgery."

The first case was one of removal of a large tumor from the brain; the second, trephining for old depressed fracture followed by epilepsy, with removal of underlying brain substance; the third was the removal of the cerebral motor centre for the left wrist and hand, for epilepsy.

Professor N. SENN, of Milwaukee, read a paper on the "Relation of Micro-Organisms to Injuries and Surgical Diseases." The conclusion was that, under certain circumstances, pathogenic organisms might be present. Acute suppurative infectious osteo-myelitis, following slight injury or exposure, was cited as an illustration of this fact.

Professor ROSWELL PARK, of Buffalo, had examined pus from fifty-two sources, and presented a table showing the number of cases in which pyogenic bacteria were found.

SECOND DAY.

Dr. HUNTER MCGUIRE, of Richmond, Virginia, read a paper on "The Formation of an Artificial Urethra for Prostatic Obstruction."

It has been my lot to meet with a number of cases of hypertrophy of the prostate gland, which produce more or less obstruction to the passage of the urine. These are conveniently divided into three classes.

1. Cases where the obstruction was due to temporary congestion of an already enlarged gland, which yielded to the ordinary treatment and did not return.

2. A class of cases when the obstruction to the passage of urine was permanent

but not great. Attention to the general health, the occasional introduction of the catheter and washing out the bladder were all that the cases required. These cases are, however, never free from danger from exposure, etc., and gradual enlargement may go on and bring about the condition met with in the third class.

3. In these cases the obstruction is great and fixed; micturition is frequent and difficult, perhaps impossible without the aid of the catheter. The introduction of the instrument grows more and more difficult. Offensive residual urine is always present, and the general health suffers greatly. Cystitis, localized or general, is a painful and pronounced symptom. Violent tenesmus of the bladder, provoked by the obstruction, injures the vesical ends of the ureters, possibly a reflux of stale urine is driven into these canals, and ureteritis follows, then pyelitis and pyelonephrosis, from which the patient dies.

The paper was devoted to a consideration of surgical interference in this third class of cases.

Dr. JOHN H. PACKARD, of Philadelphia, read a paper on "Supra-Pubic Cystotomy."

The present paper was supplementary to one on the same subject read by Dr. Packard at the last meeting, and was intended to correct an accidental omission of the views of Sir Henry Thompson. These were now considered, extensive quotations from the works of this author being given. Two cases were reported, in one of which the operation was performed for the removal of a portion of a silver catheter broken off in the bladder; and in the other, for the removal of a piece of rubber catheter, said to have been broken off several months previously. In this case, a stone weighing five hundred and seventy-one grains was removed, in the interior of which was found the *foreign body*.

Professor S. W. GROSS, of Philadelphia, thought that Dr. McGuire was to be congratulated on having introduced a new

operation, based upon the mechanism of the bladder, and the physiology of micturition—the formation of an artificial urethra in a new position. The various operations which had been performed for the relief of prostatic obstruction were next referred to, the operations of Harrison, Mercier, Bartinini, and McGill being considered.

Professor WILLIAM T. BRIGGS, of Nashville, thought that perhaps in the cases reported by Dr. McGuire, a better result might have been obtained by lateral lithotomy, provided the stones were not too large to be removed by that route, for he had noted that after incision into the prostate, the gland diminished in size.

Mr. REGINALD HARRISON, of Liverpool, England, said that there are two general methods of relieving obstruction due to enlarged prostate, one by attacking the gland through the bladder, and the other through the perineum. In his operation he makes a median or lateral incision through the perineum according to circumstances. The obstructing prostate is next divided with considerable freedom, and a drainage-tube of considerable size introduced. From this operation he gets good results. Perineal lithotomy is preferable to the supra-pubic operation, because the lateral incision gives sufficient room for all manipulations. It gives an ample opening for the removal of a stone of considerable dimensions. It also permits of the more or less permanent drainage which these cases require. He had also, through a perineal opening, used the perineal lithotrite with success. All methods of operation should be remembered, and each employed in those cases where it seems indicated.

Professor THOMAS ANNANDALE, of Edinburgh, Scotland, had come to the conclusion that if an operation is to be performed for the relief of prostatic obstruction, the perineal operation is the best. This allows of examination of the bladder, permits drainage, and probably causes a diminution of the hypertrophy. It enables

you to occasionally remove a portion of the enlarged prostate when this assumes a pedunculated form. The speaker exhibited a rubber tube which he had found useful in cases of Harrison's operation when a permanent tube is required.

Mr. ARTHUR DURHAM, of London, England, emphatically indorsed what had been said in regard to operation for stone, that no one operation is applicable to all cases. It is a great mistake to be men of one method, especially in surgery. When we hear a man say that he treats all his cases of fracture in such a way, all his cases of stone in such a way, and all his cases of prostatic disease in such a way, we may be sure that such a man has a very small practice and experience, or else is a very great fool. In cases in which stone in the bladder is complicated with enlarged prostate, the perineal incision seems to me to be better than the supra-pubic.

Professor HINGSTON, of Montreal, Canada, believed that the supra-pubic operation was one to be performed only in exceptional cases. These he classified as follows: 1. In those cases of stricture in which the obstruction cannot be overcome in time to relieve the patient of great suffering. 2. In cases of prostatic obstruction. 3. In cases of tumors of the bladder which would interfere with the lateral operation. 4. In cases where the stone is too hard or too large to be removed either by lithotritry or by lateral lithotomy. He had himself removed, without injury to the soft parts, a stone weighing five ounces and five drachms.

Sir WILLIAM MACCORMAC, of London, England, had performed the operation of supra-cystotomy occasionally. He had never seen any untoward consequences, and the operation seems to be devoid of all risk. He did not consider that drainage was necessary after this operation. The bladder empties itself freely and the drainage-tube is a source of irritation.

The President, Professor D. HAYES AGNEW, being called upon, said the ground had

been so thoroughly covered that there was little to be added. He agreed with those who held that no single operation was applicable to all cases. The supra-pubic operation may be appropriate in certain cases, while in others the perineal operation is the proper one. In order to avoid the unpleasant consequences which occasionally follow the perineal operation in children, where the prostate is small, I avoid the introduction of the finger into the bladder, and remove the stone with forceps not much larger than the staff.

While there may be no danger in the supra-pubic operation in skilled hands, yet with the inexperienced operator there will be risk of opening the peritoneal cavity. He thought that a number of cases had been reported of rupture of the bladder following injection of the organ after dilatation of the rectum with the rubber-bag.

The following are the officers of the Association for the following year: President, Dr. D. W. Cheever, of Boston; Vice-Presidents, Dr. T. W. Richardson, of New Orleans, and Dr. John B. Roberts, of Philadelphia; Secretary, Dr. J. R. Weist, Richmond, Indiana; Treasurer, Dr. P. S. Conner, of Cincinnati; Recorder, Dr. J. Ewing Mears, of Philadelphia; Additional Members of Council, Dr. W. F. Peck, of Davenport, and Dr. S. W. Gross of Philadelphia.

The next meeting to be held, beginning the second Tuesday in May, 1889, at Washington.

Dr. WILLIAM T. BULL, of New York, presented a communication on "The Surgical Management of Typhlitis and Perityphlitis."

Dr. J. EWING MEARS, of Philadelphia, read a paper on "The Propriety of Surgical Interference in Perforating Typhoid Ulcer."

THIRD DAY.

Dr. GEORGE W. GAY, of Boston, read a paper entitled "The Comparative Methods of Tracheotomy and Intubation in the

"Treatment of Croup," of which the following were the conclusions:

1. Intubation may be tried in all cases of croup.

2. It is preferable in young children and in cases in which the tube must be left entirely to itself.

3. It may be resorted to for euthanasia provided the operator is reasonably expert and can do it without producing collapse.

4. Tracheotomy is called for in those cases in which intubation can not be done, or in which it fails to give relief, or in which the laryngeal tube is repeatedly rejected, or requires frequent removal for cleansing. It may also be required in those cases in which sufficient food cannot be given while the O'Dwyer tube is in position. It is also preferable in cases situated at a distance from a surgeon capable of introducing the laryngeal tube.

5. The tracheotomy instruments should always be at hand in intubation in case of emergency.

Dr. H. H. MUDD, of St. Louis, said that intubation had been done as a precautionary measure in many cases in which tracheotomy would not have been thought of. Some of the good results of intubation are to be attributed to this fact. In most of his cases of intubation where the patient survived he had found it necessary to resort to tracheotomy; patients have recovered after tracheotomy where intubation has proved unsuccessful.

Professor THOMAS ANNANDALE called attention to the value of the introduction of a tube through the glottis in cases of operation about the throat where there was risk of suffocation or of hæmorrhage into the trachea.

Dr. HUBER, of New York, had performed intubation in ninety-four cases with recovery in thirty-seven. He does not operate early. He considers the internal use of bichloride of mercury as of equal importance as the intubation. There is occasionally an advantage in using a small tube with the expectation that it will be

coughed out, and with it a portion of the membrane, and affording an opportunity for feeding while the tube is out.

Dr. T. F. PREWITT, of St. Louis, in one case of diphtheric paralysis, had, in order to avoid passage of fluid into the larynx, passed a catheter through the glottis and plugged the larynx with a sponge. This permitted the fluid to go into the œsophagus without risk of entering the trachea. After feeding, the sponge and tube were removed.

Dr. D. W. CHEEVER, of Boston, advocated the disuse of anesthetics in cases of tracheotomy, provided proper assistants can be secured. The operation is not accompanied with much pain. By avoiding the anæsthetic many of the risks of the operation are avoided.

Dr. L. McLANE TIFFANY, of Baltimore, read a paper entitled "Pregnancy and Operative Surgery—their Mutual Relations," of which the following were the conclusions:

1. Pregnancy is a physiological condition and does not contra-indicate a surgical operation.
2. During pregnancy temporary strain may be exerted on some organ, *e. g.*, kidney, inducing impairment of function.
3. A surgical operation upon a pregnant woman is to be conducted so as to avoid inducing abortion, in itself a serious accident.
4. The main cause of abortion after operation is sepsis.
5. The probability of sepsis after operation is increased if the patient is suffering from disease, either temporary or chronic.
6. Abortion may result from operation—shock, perhaps.
7. Hæmorrhage does not seem to induce abortion.
8. Union of fracture may be retarded by pregnancy.
9. Recorded cases show that the unborn child receives no evil impress when the mother is subjected to operation.
10. When a surgical operation upon a

pregnant woman is under consideration, the function of all the patient's organs must be carefully investigated and regulated. An operation then conducted antiseptically may be expected to result as though pregnancy were not present.

Dr. J. EWING MEARS, of Philadelphia, thought that while pregnancy was to be regarded as a physiological process in the native woman, it could not be considered in this light in the society woman. Another important point to be considered was whether the operation required was one of expediency or of necessity. In the latter case the surgeon must do his duty, let the result be what it may, but whether or not operations of expediency were to be performed on the pregnant woman was a question only to be decided by further experience.

Professor P. S. CONNER, of Cincinnati, reported a case of "Subcutaneous Operation for Anchylosis of the Knee," in a woman who, it was subsequently learned, was six weeks pregnant. The operation was followed by severe septic infection, but this did not interfere with the normal course of the pregnancy.

Dr. WILLIAM HUNT, of Philadelphia, raised the question whether or not in the case of inevitably fatal injury of a pregnant woman, as from burns, it was justifiable to run the risk of sacrificing the mother a few days sooner, when by so doing the life of the child might be saved, or must we wait until the last breath has left the body before making the incision.

Dr. R. B. BONTECOU, of Troy, reported the case of a rupture of an umbilical hernia in a woman seven months pregnant. The intestines were out four hours. They were then cleaned and replaced. The woman recovered and a healthy child was born one month later.

Dr. L. McLANE TIFFANY, of Baltimore, thought that in the case suggested by Dr. Hunt there could be no question as to the propriety of operation. By so doing one life may be saved.

Dr. N. P. DANDRIDGE, of Cincinnati, read a paper on "Nerve-Stretching."

The following conclusions were presented:

1. That nerve-stretching should be condemned in all forms of central disease, such as tabes, myelitis, etc.
2. That it offers little prospect of relief in tetanus.
3. That it should be regarded as a reliable method in cases of persistent neuralgia and peripheral paralysis of sensation in the extremities.
4. That stretching the facial is indicated in tic-convulsif.
5. That further trial is justified in reflex epilepsy.
6. That stretching the lingual should be tried in painful affections of the tongue.
7. That resection should always be preferred to stretching in the spinal accessory and in the branches of the fifth nerve except the lingual.

Dr. DE FOREST WILLARD, of Philadelphia, read a report of three cases of Nephrectomy performed for—1, gunshot wound of the kidney; 2, tubercular disease of the kidney.

AMERICAN GYNÆCOLOGICAL SOCIETY.

SEPTEMBER 18.

The President, Dr. ROBERT BATTEY, of Rome, called the Society to order.

Professor FORDYCE BARKER moved to reconsider the action which had been taken at the last meeting, and to accept the report of the committee which recommended joining the Congress of American Physicians and Surgeons.

This was seconded and carried.

Professor Barker was appointed a committee to inform the executive committee of the Congress of this action of the Society.

Dr. HOWARD A. KELLY, of Philadelphia, read a paper on "Ureteritis, its Diagnosis and Symptomatology."

Catheterization of the ureters is a proceeding which is very useful in the

diagnosis of disease of the ureters and the pelvis of the kidneys. Ureteritis is probably more common than has usually been supposed. While this method of procedure is of comparatively recent date the disease—ureteritis—was recognized years ago by Rayer and by Cruveilhier. It may be either descending or ascending; perhaps it is more commonly secondary and descending. It may also be ascending, following gonorrhœa and other diseases which affect the bladder. The ureter may also be diseased from the passage of renal calculi, and as a complication of many forms of disease of the uterus and its surroundings. Hence it is important that the functions and the condition of the ureters should be carefully ascertained in any suspicious case. These and other facts suggest that more careful study of renal and bladder troubles is now in order for scientific gynæcologists.

Examination of the ureters may be made by inspection, by palpation, and by catheterization. The first may be practiced by splitting the vesico-vaginal septum at the proper level, then turning the opening into the vagina, as suggested by Dr. Thomas Addis Emmet. This may be done by pressure from without, or by pressure through the rectum, as suggested by Dr. Polk. By palpation the course of the ureter is to be followed by delicate touch, compression being exercised both through the abdominal wall and the vagina. If the ureter is dilated, its course may not infrequently be traced by this means. The method of catheterization, is however, the most practical, and the method of Pawlik, that of freehand catheterization, is believed to be the most applicable.

In three cases of supposed bladder trouble he found that it was the diseased ends of the ureters which were causing trouble, the trouble disappearing when these were cured. Other cases were also narrated to prove the value of this method of procedure. The literature of this subject is not extensive and includes, in addi-

tion to the papers of Pawlik and Simon, the theses of Bonnet and Chaumont, and the recent paper of Silbermann.

Dr. POLK found the subject one of great interest, and had given much time to its consideration, both upon the living and the dead subject. The method of examining the ureters which was most commonly referred to was Pawlik's. He had made many trials of it, but usually without much success. He had found more satisfaction in making a button-hole fistula at the base of the bladder as recommended by Dr. T. A. Emmet, and then by suitable pressure the ends of the ureters could be made accessible. In palpating for the ureter it is to be remembered that it is between the line of the uterus and the brim of the pelvis. For a catheter he preferred one of broad curve like a prostatic catheter, and after this had been entered another instrument should be passed into the rectum, with which the onward course of this instrument in the ureter could be traced.

Dr. H. T. BYFORD, of Chicago, had practiced palpation of the ureters in one hundred cases, desiring to find a simple method of determining its course. If the uterus is taken as a centre and the finger in the vagina be made to radiate from it along the pelvic roof, a line would at length be reached where a gentle resistance of a cord-like body would indicate the presence of the ureter. This line having been determined, it would not be difficult after a little practice to find the mouth of the ureter and introduce a catheter, the catheter being guided by the finger in the vagina.

Dr. W. H. BAKER, of Boston, thought that very few obtained sufficient skill to catheterize the ureters. He believed the method was of value, however, in enabling one to give a diagnosis as to the extent of diseases of the bladder, etc. It must not be forgotten, in all these manipulations, that there might be displacement of the ureter as had occurred in his experience.

Dr. H. C. COE, of New York, found in

three autopsies that pressure was exercised upon the ureters two inches from their endings by cicatricial nodules which were associated with uterine disease. This condition might have caused dilatation of the ureters which would have admitted of their determination by palpation.

Dr. BACHE EMMET had found that as good results as by any method could be obtained as to determining the position of the ends of the ureters, by making a fistula in the base of the bladder, then pressing in the median line of the abdomen, then varying the pressure to one and then the other side. He believed that ureteral trouble complicated various uterine troubles, and that a diagnosis of pelvic disease could hardly be considered complete until the condition of the ureters was known. He did not believe that disease of the ureters was a very common complication of bladder disease.

Dr. KELLY, in closing, detailed the experiments of Tuchmann, Silbermann, and others in catheterization, and showed the value of the operation. He thought disease of the ureters could not be called uncommon, that it might be due to inflammatory deposits, displacements, etc., and that examination of these organs was eminently simple and practical.

Professor THOMAS ADDIS EMMET, of New York, presented a paper entitled "Cause and Treatment of Urethrocele."

This condition is generally considered as due to a loss of support in consequence of laceration of the perineum, but it is never found after first labors unless the rupture has extended through the sphincter ani. It always exists after serious double laceration of the cervix in consequence of severe labor, which may have been either rapid or tedious. The former is the more common cause, the latter sometimes acts as a cause when ergot has been given or when the labor has been instrumental. The trouble is usually in the lower or vaginal part of the urethra. In some cases the accident is doubtless prevented when

a few ounces of urine are in the bladder during the expulsion of the head, the urine acting as a cushion and only being discharged as the space is required. This is contrary to the long accepted dictum that the bladder must be empty when the head is delivered. The laceration may be transverse or longitudinal, and a few fibres or many may be ruptured. There is seldom a rupture through the vaginal mucous membrane. Urethrocele must be differentiated from the thickened condition of the urethra in which there is no rupture. In urethrocele the length of the urethra is diminished, a pouch being formed in which the urine collects. Serious reflex symptoms may be excited by such a condition as is shown in a very aggravated case narrated in the paper.

Dr. PRIESTLY, of London, referred to a paper written by him in 1869, in which he referred to sebaceous cysts of the urethra which he thought formed a condition somewhat analogous to that referred to by Dr. Emmet in his paper. He thought such conditions as Dr. Emmet treated of might be due to other causes than labor; for example, a sebaceous cyst of the urethra which he had seen had arisen entirely independently of labor.

Professor SKENE, of Brooklyn, thought that cystocele and urethrocele were very apt to be confounded. In his experience it was not the lower portion of the urethra which was apt to be involved as the result of severe labor. Complete dislocation of the urethra, the latter being torn from its attachments at the pubic arch, was a more common accident of labor than the sacculated condition to which Dr. Emmet referred, and he believed the longitudinal or transverse ruptures of the fibres of the urethra to be relatively rare. The button-hole operation would be of no use in cases of dislocated urethra, but for the sacculated condition it would apply. Bozeman had described the dilated condition of the urethra following labor ten or fifteen years

ago, and had suggested the opening of the urethra as a means of relief.

Dr. LUSK, of New York, had found Emmet's operation very efficient in a very troublesome case which had long been under his observation, and had, finally, been cured by Dr. Emmet. Since then he had performed the operation in several cases with great satisfaction.

Dr. KELLY referred to a case of urethrocele which had been reported by Dr. Skene Keith, and upon which he had performed Emmet's operation with marked success. Urethrocele should be differentiated from false urethrocele or pouting of the urethra, which was often caused by straining in urination.

THE AMERICAN OTOLOGICAL SOCIETY.

SEPTEMBER 18.

Professor J. S. PROUT, of Brooklyn, President, in the chair.

Dr. S. O. RICHEY, of Washington, read a paper on "The Primary Physiological Purpose of the Membrana Tympani," which appears elsewhere in this number of this journal.

Professor CHARLES H. BURNET, of Philadelphia, read a paper on "Chronic Purulent Inflammation of the Tympanic Attic." He claimed that the chief difficulty in the diseases of the attic consisted in the inefficient drainage caused by the intricate irregularities of the ossicles being involved in the suppurative process, and the smallness of the opening in the membrana flaccida. Relief was most readily obtained by the use of the tympanic syringe with solutions of peroxide of hydrogen or 5 per cent. carbolic acid, and the enlargement of the perforation when necessary, and possibly in some cases the removal of the ossicles—the malleus and incus.

Dr. SAMUEL SEXTON, of New York, read another paper on "Excision of the Drum-head and Ossicles for the Cure of Chronic Purulent Inflammation of the Attic of the Tympanum."

In most cases of persistent otorrhœa the tympanic attic is the seat of disease, and it is difficult to reach it with remedies. Having some time since been impressed by the surgery of the joints, and reflecting on the resemblance of these cases to those of chronic joint disease, in the chronic mucoperiosteal inflammation, caries of the bony walls, and synovitis of the articular surfaces of the ossicles, he had concluded to try the removal of disease structures, thus securing efficient drainage, from which he claims more satisfactory results are obtained.

In reply to a question relative to the danger of wounding the chorda tympani, Dr. Sexton confessed to having had some difficulties in this respect, but added that he thought in many cases calling for the treatment the chorda tympani was already destroyed.

Dr. GORHAM BACON, of New York, read a paper on "A Case of Cerebral Abscess Following Extensive Necrosis of the Temporal Bone. Operation. Death from Secondary Hæmorrhage." The patient was a man of thirty, had had chronic purulent discharge from left ear for two years. Polypi and granulations were removed through the external meatus, and a sinus was found leading upwards from the meatus. Left facial paralysis developed in a short time. An abscess was found above and behind the ear, the opening of which gave some relief. The mastoid region was explored, but no difficulty was found. Dr. Robert F. Weir then made an incision through the temporal muscle, and thrusting his finger through the track toward the base of the skull, relieved a pulsating swelling of about half an ounce of pus. Improvement followed for a short time, but soon became worse, and as a certain form of aphasia had developed, he said "yes, sir" to everything said to him. A counter opening was made in the region of Broca's convolution and a drainage-tube introduced. Secondary hæmorrhage occurred, supposed to have been caused by the drainage-tube

pressing on and eroding the middle meningeal artery. Dr. Weir himself suggested that probably the drainage-tube was an error.

Dr. O. D. POMEROY, of New York, read a paper on "Chronic Suppurative Otitis, with Metastatic Irido-Choroiditis and Abscess on the Side of the Neck Communicating with the Tympanum." The patient was about fifty years of age, and was seen on account of iritis. Soon there was developed pus in anterior chamber. Paracentesis of anterior chamber did not prevent a perforation of the sclera in the upper part. After the enucleation of the eyeball a stiffness in the neck, which had been previously supposed to be of a rheumatic character, revealed deep fluctuation.

An incision gave vent to several ounces of pus, and pressure caused the pus to appear also in the external meatus. Dr. Pomeroy concluded that the abscess in the ear was the origin of the trouble; that the swelling in the neck was an extension of the difficulty, and that the abscess in the eye was of a metastatic character.

Dr. J. O. TANSLEY read a paper on "Nasal Difficulties in Ear Disease." Reference was made to the various irregularities and swellings and hypertrophies in the nasal choanæ. The author advocated the removal of such abnormal conditions, either by the snare, saw, forceps, or galvanocautery. He gave the preference to the cautery in the anterior part of the nose, and used the snare by preference for the removal of the posterior part of the inferior turbinated bones.

Dr. SAMUEL THEOBALD, of Baltimore, contributed a paper on the "Employment of Boracic Acid in Solution in the Treatment of Otis Media Suppurativa."

In the ordinary cases of chronic suppurative otitis media, in which there is usually extensive destruction of the drumhead, he uses boracic acid in powder, applying it by means of insufflation, but in acute cases and chronic ones, in which the destruction of the drumhead is not exten-

sive, and in which closure of the perforation may be anticipated, he prefers to use a saturated solution of boracic acid.

The advantages claimed for the solution were that it was never irritating, often gave immediate relief, never blocked up the discharge of pus, and is more readily used at the patient's home.

Dr. GREEN read a paper by Dr. C. J. Blake, of Boston, "On the Influence of the Telephone on the Organ of Hearing"—a very technical paper, which involved a great number of personal observations relative to variations in vibration under different circumstances. The inference was that the persistent use of the telephone may be injurious to persons previously disposed to an affection of the ears.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

SEPTEMBER 19.

Professor HENRY W. WILLIAMS, of Boston, President pro tempore.

Professor DAVID WEBSTER, of New York, read a paper upon "Some Tenotomies for the Correction of Heterophoria, with Results."

He reported forty cases; twenty-five had been operated on but once, in sixteen a second operation was done, and three had previously been operated on by others, making a total of sixty tenotomies. The operations had been done since the beginning of July, 1886. A slight over-correction was usually aimed at and attained. In three cases a slight reduction of the effect was necessary. All operations were done under cocaine, and the eyes tested from time to time to determine when sufficient effect had been produced. In three hysterical males remarkably good results were obtained. Most of the operations were done for headache and asthenopia. The writer had reached the conclusion that no person should have a tenotomy done for heterophoria, without inconvenience probably due to it; very slight degrees

may cause trouble and should be attended to. All other methods should be tried before tenotomy.

Dr. SAMUEL THEOBALD, of Baltimore, read a paper entitled "Is Astigmatism a Factor in the Causation of Glaucoma?" The author's experience led him to believe that when the meridian of least refraction was vertical, or approached the vertical, that more effort was made to correct the difficulty, greater hyperæmia of the ciliary muscle resulted, and the condition known as glaucoma precipitated.

Dr. PETER A. CALLAN, of New York, read a paper on "The Treatment of Ulcers of the Cornea."

The ulcers occurring in young persons and children are really phlyctenulæ of the cornea, or neglect of lid friction causing absorption which gives rise to an ulcer. The treatment is yellow oxide of mercury salve (two to ten per centum) placed between the lids once daily; atropia and cocaine if necessary; tonics, open air exercise, regulation of diet, airy sleeping quarters, smoked glasses, avoidance of dark room or bandages.

He gives preference to the circumscribed application of a 2 per centum solution of nitrate of silver to the ulcer alone.

Dr. EDWARD JACKSON, of Philadelphia, read a paper on "Meridional Astigmatism." By this was meant the difference in refractive power of the same meridian as examined at the centre of the pupil or at the margin. He found considerable difference in this respect in different individuals, and thought a good deal of the difference which was found in the same individuals, according as they were or were not under the influence of atropia, due to this factor. There was some objection made to the term used by the author, as it is impossible to exclude the feature of dispersion.

The committee, composed of Doctors Edward Jackson, Henry D. Noyes, and Swan M. Burnett, appointed to consider the proposition to designate prisms according to their refractive power recom-

mended the indorsement of the following propositions:

First. Prisms ought to be designated by the number of degrees of minimum deviation they produce.

Second. Where intervals of less than one degree are desired half degrees and quarter degrees should be used.

Third. To indicate that degrees of deviation are meant, the letter "d" shall be added. Thus, "prism 2°d" will indicate a prism that produces a minimum deviation of two degrees.

Dr. J. O. TANSLEY, of New York, exhibited the ordinary long box with glass sides and lenses, which, when filled with smoke, shows, by the aid of the lantern, the general principles of refraction and reflection.

Dr. W. F. MITTENDORF, of New York, read a paper on "Acute Cocaine Conjunctivitis." The notes of three cases were recorded. The affection was characterized by a swollen, shiny appearance of the conjunctiva associated with profuse acrid discharge. It was shown by the use of different salts of the same alkaloid and the special care taken with the preparation of the solution that the irritation was due to the cocaine itself. Several members had recognized similar conditions in certain cases after the use of cocaine solutions. Dr. Mittendorf suggested that it may be due to the influence of the cocaine in paralyzing the terminal fibres of the sympathetic.

Professor S. M. BURNETT, of Washington, exhibited some apparatus for diagnosis of refraction. This consisted of a disc of lenses to be used in applying the shadow test, arranged to be fixed to the wall and adjustable to any height, and readily used for either eye, or swung out of the way when not in use.

The object of the device is to facilitate the process of skiascopy. Attached to the centre of the disc is a tape-measure to determine the distance at which the observation is made.

Dr. CARL KOLLER, of New York, read a paper on "Blepharospasm." He referred especially to that form of blepharospasm which was a reflex irritation of the terminal nerve fibres in the cornea and conjunctiva. Such cases often revealed a fissure situated in a fold of skin which extends outward from the external canthus. The chief object in view in the treatment of such cases should be the relief of the external fissure.

Dr. R. H. DERBY reported a case of "Recurrent Monocular Optic Neuritis," with recovery. The remedies used were iodide of potassium and mercurial inunctions.

Dr. O. D. POMEROY reported his experience with the bident of the late C. R. Agnew, using by preference the modification suggested by Dr. Andrews. He spoke very favorably of the instrument and gave a word of caution against pushing the lens too far forward. He extracts the lens with a sharp hook or spoon.

AMERICAN ORTHOPEDIC ASSOCIATION.

Second Annual Meeting, held at Washington, D. C., September 18, 19, and 20.

FIRST DAY—Morning Session.

The Association met, and was called to order at ten o'clock by the President, Dr. NEWTON M. SHAFFER, of New York.

The Secretary, Dr. LEWIS HALL SAYRE, of New York, read the minutes of the preliminary meeting, which were approved.

Professor V. P. GIBNEY, of New York, read a paper on "The Treatment of Club-foot by means of the Thomas Wrench, or T. T.," and presented an apparatus.

FIRST DAY—Afternoon Session.

Dr. H. HODGEN, of St. Louis, read a paper on "Morton's Operation for the Immediate Reduction of the Club-foot," and reported five cases of congenital equinovarus, three of which were double.

His deductions were: 1. Tenotomy for equinus should be made first and the de-

formity at once reduced. 2. Immediate reduction of the deformity is the proper procedure. It saves time, pain, and the correction is more certain. 3. It can be used in all cases with safety, but has no advantage over hand-pressure of the surgeon in young subjects when the tissues are soft. 4. There is no need of preparatory treatment of the tissues by poulticing. 5. The force should be applied inwards, downwards, and slightly forwards, until the tissues are ready to give way. 6. Plaster dressing, applied with the foot in position of varus, and allowed to remain for two months. 7. The bursæ will have nearly disappeared when the cast is removed, and they are not as a rule tender. 8. The use of a club-foot shoe for some time, in which pressure can be made in the direction of the crushing force. 9. A marked rise of temperature is not to be expected, and when this and pain are present one must look to the plaster as the cause in a large percentage of these cases.

This was followed by a paper entitled "A Practical Point in the Treatment of Pott's Disease of the Spine," by Dr. A. B. JUDSON, of New York.

He believes that in the unsatisfactory state of the treatment of Pott's disease it would be well to judge of the efficiency of mechanical treatment by the impression made by the apparatus on the skin, which should be kept dry, covering the projection. The object of treatment is three fold—to fix the diseased bones; to transfer pressure from the bodies to the processes, and to reduce the deformity. If the skin near the summit of the projection becomes thickened and callous, which it does without discomfort if the pressure is carefully increased from time to time, it is to be considered that the apparatus is acting as it ought to, and when the great pressure is made compatible with the integrity and comfort of the skin, the apparatus has reached the limit of its efficiency. This rule is less applicable to the treatment by suspension and the plaster-of-Paris jacket. In the hands of the

general practitioner plaster of Paris gives relief to many cases which would otherwise have no mechanical treatment. But the orthopedic surgeon can do better by the use of tractable steel, modified to fit the varying needs of the patient with the mechanical skill which belongs to practitioners of that class.

Dr. E. H. BRADFORD, of Boston, presented an "Analysis of Treatment of Seventy Cases of Club-foot."

He said the treatment necessarily requires:

1. The rectification of the misplaced bones.
2. Retention in a normal position until the abnormal facet of the astragalus renders the pressure of a new position normal.

The following questions in regard to treatment are at present unsettled:

- a. In what cases is it advisable to correct and treat by mechanical means alone, without the aid of any operative interference, even tenotomy?
- b. When is tenotomy advisable?
- c. Can severe cases be entirely corrected and permanently cured without tarsal resection?
- d. Is tarsal resection or osteotomy a justifiable operation?

His conclusions were:

1. That the cases of infantile club-foot can, as a rule, be thoroughly and efficiently treated without tenotomy by mechanical correction and mechanical retention alone.
2. That in older cases tenotomy aids the correction, and is not injurious in the permanent result.
3. That resistant cases of the severest type can be corrected without tarsal osteotomy.
4. That in some cases of resistant club-foot tarsal osteotomy is needed for perfect rectification, and is not only justifiable, but may be indicated in exceptional instances.

Dr. G. W. RYAN, of Cincinnati, reported a case of reflex valgus.

SECOND DAY—Morning Session.

Dr. ROYAL WHITMAN, of Boston, read a paper entitled "Observations on Seventy-five Cases of Flat-foot, with Particular Reference to Treatment."

Clinically, flat-foot is an affection which, in the majority of cases, occurs independent of local or constitutional disease. The direct cause is overweight or overwork for feet subjected to mechanical disadvantages. These are (1) the common habit of turning on the toes in standing and walking, an attitude which brings an increased and continual strain on the weakest part of the foot. (2) Weakness of muscles from disease, and deformities caused by improper shoes. Flat-foot being essentially a dislocation should be treated as other dislocations, by reposition and retention in normal positions, until by exercise and avoidance of faulty position the muscles may regain their normal strength. In ordinary cases such retention can only be accomplished by some form of mechanical support. A brace should be constructed on principles somewhat as follows: It should be inelastic, light, and comfortable; should fit the foot perfectly, and should not interfere with its normal movements, or the action of its muscles. A steel brace designed on these principles was shown. The paper was illustrated by casts and diagrams.

Dr. JOHN RIDLON, of New York, exhibited a wrench which he used for the same purpose as that exhibited by Professor Gibney, it being modified from a "utility" wrench. It differed from Thomas' and Gibney's modification of Thomas' wrench in that the grip was taken by sliding the lower grip-bar towards the upper simply by manual pressure. When in position it was held by a cog-and-spring arrangement which could instantly be released by pressing a trigger. The grip-bars were straight, instead of curving towards each other as in the Gibney instrument. This was an advantage when the instrument was used as an osteoclast in cases of badly united Colles' fracture of the radius. As an instrument

for cases of club-foot the author did not think it had any special advantages over Thomas' wrench.

Dr. AP. MORGAN VANCE, of Louisville, read a clinical report of eight cases of femoral osteotomy for the correction of deformity resulting from hip-joint disease in five of the cases, and knee-joint disease in the remaining three. He advocated the subcutaneous method as being better than the other operation by open wound, stating that he would break a man's femur subcutaneously with as little misgivings as to the outcome as he would divide his tendon Achilles. All of the cases reported had practically reached adult life, the youngest being 14½ years of age, the oldest 32.

SECOND DAY—Afternoon Session.

The PRESIDENT exhibited Colin's osteoclast to the Association.

Dr. HENRY L. TAYLOR, of New York, read a paper on "Senile Coxitis."

By senile coxitis he understood a rheumatic affection of the hip-joint, occurring in old people, and characterized by pain, stiffness, muscular spasm, and disability, but never showing a tendency to suppuration. It may or may not be associated with similar trouble in other joints. The point he makes is that some of the cases which have resisted the ordinary medicinal and dietetic treatment, and in whom the hip-joint disorder is of such a grade as to practically incapacitate them from locomotion, may still be very much benefited and the comfortable use of the limb restored by resorting to mechanical treatment.

He cited two cases in females about 57 years old, suffering from senile coxitis of disabling grade; in one, the disease was non-articular; in the other, several joints were affected in addition to the hip. In the first, although the disease has lasted eight years, hip trouble had never before been suspected, as the pain and lameness were referred to the knee. These patients were put to bed from four to six weeks,

with the long counter-extension hip-splint and sixteen to eighteen pounds extra weight, and were then allowed to get up on the jointed supporting splint with perineal strap, which protection was kept up for about two years, with subsidence of active symptoms in the joint and restoration to comfortable, unaided locomotion. So far as heard from they continued well.

Dr. BENJAMIN LEE, of Philadelphia, read a paper on "*Hæmatoma Oris* as a Sign of Injury to the Spine in the Superior Cervical Region."

His conclusions were: (1) That this pathological condition is idiopathic, never traumatic. He would not deny the existence of such a condition. It has a *facies* and history of its own. The same amount of violence would probably produce an extravasation of blood in the tissues of the ear in an insane person, but that would not be the "insane ear." (2) That the local tissue-change which makes an extravasation possible is dependent upon a degenerative alteration in the nerve centre which controls the circulatory apparatus of the auricle, involving, or not, the larger arterial branches.

This paper was followed by one on "Osteotomy for Anterior Tibial Curves," by Dr. DE FORREST WILLARD, of Philadelphia.

Rickets, although a constitutional disease dependent upon mal-assimilation and mal-nutrition, yet exhibits its worst phases in deformities of the bones.

Anterior tibial curves are among the most frequent of these distortions.

Treatment: (1) Manual straightening and the employment of suitable apparatus. This may be successful in young children with the bones still springy, but in all other cases it will utterly fail, and time and money will be wasted.

Braces are useful in laterally bowed legs, but not in anterior curves.

2. Forcible fracture: *a*, manual; *b*, instrumental.

a. Manual fracture. A strong surgeon can usually break the bones of a child

under 3 years of age, especially if the knee be brought into use as a fulcrum, but the point of fracture is uncertain. The result is a simple fracture.

b. Osteoclasia. The osteoclast applied to the thigh is a definite and comparatively certain and exact instrument in determining the point of fracture, but in the leg the sharp tibial edge renders the employment of much force a dangerous procedure as regards the life of the soft parts.

3. Osteotomy: *a*, simple; *b*, cuneiform.

a. Simple section of the bone with the osteotome, although it produces a compound fracture, is, practically, almost subcutaneous, and if done with thorough asepsis, is rarely followed by suppuration. It is applicable to all except the very worst cases of deformity, since even sharp angles of bone are speedily inclosed in the callus. Suturing of the divided bone is rarely necessary.

b. Wedge-shaped osteotomy is applicable to severer grades of deformity. This operation is much more likely to be followed by suppuration, but with strict asepsis such an accident is rare. Plaster of Paris furnishes the most convenient form of after-splint.

Osteotomy offers the simplest, surest, and most satisfactory results in anterior tibial curves.

Illustrative cases were described and the details of the antiseptic operation fully enumerated.

Dr. A. J. STEELE, of St. Louis, read a paper on "Two Knee-joint Excisions."

In these cases he had done excision of the knee, the first in a lad with chronic fungoid and suppurative joint-disease which had been going on from early childhood. The second in a young woman with right-angled ankylosis of nine years' standing, resulting from injury, and doubtless subsequent to acute synovitis. In the first case the joint was rapidly going on to destruction and the constitution breaking

down; in the second, the inconvenience in walking prompted measures for relief.

It was hoped arthrectomy alone might afford the required relief in Case I, but on exposing the joint the serious bone involvement prompted its removal. Antisepsis was used, all diseased tissue removed, including the patella, the bones pinned together with steel nails, and permanent dressings applied. Subsequent oozing caused change of dressing to a bracketed plaster-of-Paris splint, with suspension. Union was rapid and constitutional improvement prompt. At the present time, three months since the operation, the boy is in robust health and about on crutches, wound healed, bones firm, and limb straight. The removed eroded bones, the pins used, and photograph of limb, were shown.

In Case II strict antisepsis was not observed. The joint was removed *en bloc*, leg straightened and bones doweled together with four needles, the ordinary crotchet, a bracketed wire-splint applied, and the leg suspended; no untoward symptoms occurred and little or no pus found. One bone-pin was removed about the fourth week, the other one breaking off in the bone. It was expected this piece left in would soften and be absorbed. For a time it seemed to cause no irritation, but after three months it caused suppuration, came to the surface and was picked out, being quite eroded. At the present time, eight months since the operation, the patient is walking, usually without even the assistance of a cane, on a three inch patten, and with scarcely a limp.

Dr. W. R. WHITEHEAD, of Denver, read a lengthy paper entitled "Remarks on the Operative and Mechanical Treatment of some Joint-Diseases and Injuries, with Special Reference to the Hip, Knee and Elbow Joints, with Illustrative Cases."

Dr. R. W. LOVETT, of Boston, read a paper on the "Treatment of Hip-Joint Disease by Fixation and Extension, with the Exhibition of a New Splint."

He said American traction splints are

criticized by English surgeons on the ground that they afford imperfect fixation. With a view of determining how much fixation traction alone affords, some experiments were made upon a healthy child. It was found that with four pounds traction, exerted by means of a hip-splint with one perineal band, in walking 35° motion at the hip-joint took place. With the highest endurable traction (8 lbs.) 15° of motion took place. Evidently traction alone cannot afford fixation to a diseased joint. It does not seem likely, either, that it separates the joint surfaces, inasmuch as in the case experimented on the power of the thigh muscles was roughly estimated to be 36 pounds. With all this force, when set in muscular spasm, they would pull the head of the bone against the acetabulum with more than that power, and the antagonizing force is only eight pounds at most.

Experiments as to distraction upon the cadaver do not reproduce the clinical conditions, inasmuch as muscular spasms, the most important factor of all, is left out of account.

A hip-splint providing fixation as well as traction was shown, being merely a slightly modified combination of the English Thomas splint with the American traction splint. Its best use is in bad cases where any joint-motion does harm, and in cases where deformity is present, inasmuch as it is possible to correct the deformity while the child goes about on crutches.

Dr. SAMUEL KETCH, of New York, read a paper on "Lateral Curvature and its Early Treatment."

The Association then elected the following officers for 1889:

President—E. H. Bradford, Boston.

First Vice-President—Benjamin Lee, Philadelphia.

Second Vice-President—V. P. Gibney, New York.

Secretary and Treasurer—R. W. Lovett, Boston.

Next place of meeting, Boston, in September, 1889.

AMERICAN RHINOLOGICAL ASSOCIATION.

FIRST DAY—MORNING SESSION.

The sixth annual meeting was held at Cincinnati, Ohio, September 12, 13, and 14.

The Association was called to order by the President, at ten o'clock.

Dr. A. B. THRASHER, of Cincinnati, delivered an address of welcome, after which the PRESIDENT delivered the annual address, in which he recalled the progress that has been made in rhinology.

Dr. J. E. SCHADLE, of St. Paul, Minnesota, read a report of "A Case of Chorea of the Soft Palate, caused by the Hypertrophy and Hyperæsthesia of the Mucous Membrane Covering both Inferior Turbinate Bodies."

He said some forms of headache and of spasmodic asthma are, in many instances, the outgrowth of a nasal polypus, a turbinate thickening, or a septal deformity. These reflex neurotic disturbances disappear after appropriate measures of treatment have been directed towards the removal of their cause.

A patient was examined by Dr. Shadle on April 16, 1888. She suffered from constipation and flatulency quite frequently. The heart's action was more or less excited; the heart beat tumultuously when ascending a flight of stairs, or some other elevation. She complained of marked obstructed nose-breathing; her voice was impaired, especially when singing. The principal difficulty for which she was sent to him was the spasmodic movement of the velum palati.

Faucial examination revealed distinct rythmical choreiform movements of the velum palati, accompanied by a peculiar clicking sound, distinctly audible for a distance of twelve or fifteen feet from the patient. Anterior rhinoscopic examination revealed chronic hypertrophy of the inferior turbinate bones, more especially the middle one, whose redundant tissue caused

pressure on the septum and produced obstruction of the middle meatus.

Treatment was mainly surgical. Snaring was impracticable. By the use of Cohen's post-nasal cutting forceps and the electro-cautery, he reduced the growth entirely, the procedure being followed by cessation of the choreiform movements.

AFTERNOON SESSION.

Dr. THOS. F. RUMBOLD, of St. Louis, Missouri, read a paper on "The Etiology and Pathology of Nasal Diseases." The etiology of a disease is of the greatest import. A perfect understanding of its causes and its mechanism is the goal of the pathologist. As regards heredity in the causation of rhinitis, he had long been convinced that such a theory was erroneous. The histological facts concerning cell-life would prove a successful contravention of the theory of heredity.

SECOND DAY—MORNING SESSION.

A paper entitled "The Relation of Nasal Diseases to Other Affections, Including the Brain and Nervous System," was read by Dr. JOHN NORTH, of Keokuk, Iowa.

There is no organ, he said, in the entire body that has been so neglected as the nose. Obscure and obstinate diseases have not yielded to treatment because it has been directed to the effect of nasal reflex troubles and not to the nose, the cause of the trouble.

He claimed that in 1886 he had shown almost conclusively that certain cases of neurasthenia were the result of chronic nasopharyngeal catarrh, and reported several cases to substantiate his argument, and which yielded to treatment applied to the naso-pharynx.

Dr. THOS. F. RUMBOLD read a paper on "The Effect of Nasal Inflammation on the Mind." A normal condition of the mind depends upon a normal supply of blood to the normal brain. If an acute inflammation in the nasal passages is accompanied by mental manifestations, mental incapacity

of a more severe character must accompany a chronic rhinitis.

A paper was presented on "The Etiology and Pathology of Acute Catarrh," by Dr. J. G. CARPENTER, of Stanford, Kentucky.

Among the most prominent causes, he mentioned occupations attended with dust, smoke, excessive moisture, or dry, dusty atmosphere, going about insufficiently clad, the evil results of ordinary slippers, etc.

Pathologically, acute catarrh is divided into three stages: (1) The dry stage, attended with hyperæmia, redness, heat, tumefaction, and pain of mucous membrane, the latter presenting a red, dry, or dark-red appearance. (2) Moist stage, supplementing the first; there is transudation of serum, diapedesis of the white corpuscles into the connective tissue, cell-proliferation, and organization of lymph. (3) The presence of pathological conditions, with denudation of the epithelium and the presence of a raw surface, and the excessive mucous secretion is changed to a muco-purulent or purulent one.

AFTERNOON SESSION.

Dr. R. S. KNODE, of Fort Wayne, Indiana, read a paper on "Intra-Nasal Obstruction."

He said, of all the mucous surfaces that of the nose is perhaps the most sensitive to irritating gases, vapors, and dust of different kinds, as well as sudden changes of atmosphere. Intra-nasal obstructions may be temporary or permanent, partial or complete, owing to the extent of inflammation or injury that produces them. Temporary occlusion is usually the result of some one of the forms of acute rhinitis. From severe attacks, or from the effects of repeated colds, the membrane may be found overwhelmed with plastic material, with a loss of nerve power, a pale, flabby, wrinkled condition, somewhat resembling polypus, but more sensitive to the touch, and completely filling up both cavities of the nose.

In this condition he had found nothing to act as promptly as to first use a solution of cocaine, applied with a probe and cotton, and followed with mildly stimulating solutions of chromic acid, ten grains to one ounce, after which the vaseline treatment should be used. If stenosis should return, a second application of the acid may be made, or slippery-elm plugs, slightly moistened with a weak preparation of cocaine and listerine.

Dr. E. G. KEGLEY, of Cedar Rapids, Iowa, reported "A Case of Enlarged Tonsils, with Peculiar Symptoms, Relieved by the Galvano-Cautery Snare."

The patient was 43 years of age male; first consulted him in January, 1888, with regard to a trouble which the patient termed "drooling." He presented the appearance of one suffering from hay-fever. His eyes were red and swollen, with excessive lachrymation, constant flowing and wiping of the nose, and spitting of clear fluid. Examination revealed the nasal mucous membrane highly congested, and completely closing the nasal passages. The patient's mouth was constantly filled with saliva, and tonsils enormously enlarged, filling the back part of the mouth and throat. Dr. Kegley cocaineized the tonsils and removed them both at one sitting by means of the galvano-cautery snare, the patient having experienced no pain whatever. He saw the patient the next day, who said the trouble had ceased almost simultaneously with the removal of the tonsils. He has had no further trouble.

THIRD DAY—MORNING SESSION.

Dr. A. G. HOBBS, of Atlanta, Georgia, read a paper on "The Surgery of Gummatous Growths of the Nasal Cavities," and reported four cases. In the first case he cocaineized the nasal passages with a 5 per centum spray, then attempted to introduce a Blake's snare, but found it impossible to engage the tumor in the loop. He therefore introduced a cutting spoon, and

several large masses of the growth were cut away. Four more sittings, at intervals of three days, enabled him to remove the growth entirely. The patient has completely regained her health.

AFTERNOON SESSION.

Dr. A. B. THRASHER, of Cincinnati, read a paper on "Surgical Treatment of Nasal Catarrh," in which he said that there are forms of nasal catarrh that can only be benefited, and not cured, by medicinal treatment. When we have mechanical obstructions to the lumen of the naris of a hypertrophic, hyperplastic, or neoplastic character, surgery offers the most direct path for the removal of the difficulty. What is the best method of procedure? There are cases in which the application of a chemical caustic answers the purpose well. Woakes' gouge or plow will do the work, and by the aid of cocaine will do it rapidly and painlessly.

In uncomplicated cases of chronic hypertrophic rhinitis, the conditions to be met are: (a) Obstructions to lumen of the naris, and (b) abnormal condition of mucous glands. The causal indications would at once suggest removal of the redundant tissue. The means employed should look to the accomplishment of this end, and with the least resulting scar-surface, so that the natural condition of the epithelial covering might be as nearly as possible simulated. To reach this result he had met with the most marked success in the use of the galvano-cautery knife. He first anesthetizes the part with cocaine, then introduces the knife to the posterior part of the hypertrophy, turns the sharp edge toward the tissue to be cut, heats the knife white hot, and cuts deeply, drawing the knife forward. The result is a deep linear scar in an antero-posterior direction through the hypertrophied tissue. He cuts deeply enough to destroy a portion of the submucous erectile tissue.

After electing officers and selecting Chicago as the next place of meeting, in September, 1889, the Association adjourned.

INTERNATIONAL OTOLOGICAL CONGRESS.

The Fourth International Otological Congress was held in Brussels, Belgium, September.

There was a large attendance of representative otologists, and the many countries represented made it markedly international in character. Several American otologists were present. Dr. Ch. Delstanche, of Brussels, presided.

Professor GRADANGA, of Padua, Italy, made a report of extensive investigations on the *development of the auricle*.

Professor POLITZER, of Vienna, Austria, reported the results of investigation of the pathology of middle-ear affections.

Dr. RÖHRER, of Zurich, Switzerland, in a paper presented, discussed "Rume's Experiment in Diseases of the Labyrinth."

Dr. GELLÉ, of Paris, France, gave a description of his researches on binaural reflexes.

President DELSTANCHE read a paper on "The Treatment of Sclerosis of the Middle Ear."

Dr. BARR, of Glasgow, Scotland, described some of Dr. Macewen's operations of trephining in cases of cerebral abscesses, and drew attention to possible advantages in such cases arising in ear diseases involving the brain.

Dr. BABER, of Brighton, England, presented the subject of nose and ear diseases produced or aggravated by excessive use of alcoholic beverages.

The fifth congress is to be held in Florence, Italy, in 1892.

Questions proposed for discussion in the next congress include—pathological anatomy of the internal ear, diagnosis and treatment of abscesses of the brain due to diseases of the ear, and constitutional treatment in ear disease.

CHICAGO MEDICAL SOCIETY.

STATED MEETING—July 2, 1888.

The President, J. H. ETHERIDGE, M.D., in the chair.

Dr. J. G. KIERNAN read a paper entitled, "The Mental Symptoms of Heart Disease as an Element in Prognosis, as Illustrated in the Case of Matthew Arnold."

Very frequently an account of death from cardiac failure is preceded by the statement that the deceased was in "unusually high spirits just previous to death, which occurred after unusual exertion." Cases of this kind occurring so frequently naturally raise the question whether this "high spirits" be not the expression of a pathological state. To answer the question is not easy.

Griesinger many years ago called attention to the fact that an emotional variability existed in many sane persons with cardiac disease. Very little attention has been paid to this observation, which would be somewhat astonishing, since the state described is far from infrequent, were it not for the fact that mental phenomena arising from ordinary somatic disease are very little studied—in fact, are pretty generally ignored. To form any idea of the influence of cardiac disease we are therefore forced to study the insane, since the mental phenomena arising in them from any given somatic cause are simply exaggerations of minor mental phenomena of the same type found in the sane affected with the same disease.

For example, Griesinger speaks of a slight emotional mobility which is peculiar to many healthy persons affected with heart disease.

The relations between insanity and cardiac disease are, like the other somatic relations of insanity, three-fold in character: The cardiac disease produces insanity; it is affected by insanity, and it affects pre-existing insanity. The first question naturally arising for consideration is the influence of cardiac disease in the produc-

tion of insanity. This was much overestimated by Nasse and the early alienists. In a general way it may be said that the types of insanity resulting from cardiac diseases are usually characterized by suspicion and emotional mobility.

Griesinger says that a certain etiological influence must always be attributed to cardiac disease, but there is no special frequency in the occurrence of this influence which shows itself in an exaggeration of the normal emotional mobility of cardiac disease in suspicion and depression. Luys says that the symptoms of the psychoses arising from cardiac affections are excitement and loquacity, followed by more or less prolonged somnolence. In certain cases when the cardiac affection shows itself in periodic attacks of dyspnoea with extreme respiratory anxiety, there is an equal periodicity in the appearance of psychical symptoms which show themselves at the height of the respiratory anxiety and disappear with it. Hertz has had similar experience. Burman, Savage, and Dickson have noted similar phenomena, and these are also laid stress upon by Mickle in his recent lecture.

P. Macdowell says, "We may accept it as a general, though not a constant, rule, that mitral disease produces symptoms of melancholia, and aortic lesions more frequently those of a maniacal type."

Dr. Alice Bennett has found that emotional mobility and suspicion characterize the mental phenomena of cardiac disease.

D'Astros has observed that the patients with aortic disease display very frequently an extreme impressionability, a variable, capricious, and fantastic character, and exaggerated susceptibility. The patients with mitral lesions are somewhat self-contained, and reticent. They are depressed, taciturn, and manifest a *tedium vite*, and are at times plunged into extreme depression. Mildner has reported cases in which cardiac insufferance were accompanied by emotional exaltation, followed by suspicion and furor.

Sibson says "that the chief psychical symptoms presented are depression; sometimes the patient was taciturn; sometimes having hallucinations, and sometimes displayed lypemaniac frenzy."

Morel has observed in patients attacked by paroxysmal dyspnoea resulting from cardiac disease, the periodical return of strange ideas, hypochondriacal sensations, and hallucinations of a depressing nature. Krapelin states that disease of the heart exerts a peculiar influence on the types of insanity which occur during acute rheumatism, causing them to be of an emotional, suspicious type.

Spitzka holds that the view that cardiac hypertrophy of the left side with aortic valvular lesion is more apt to be associated with maniacal conditions, and cardiac hypertrophy of the right ventricle with mitral valvular lesion with melancholic states, is supported by too few observations to merit acceptance; the blood pressure in recorded cases was not registered, hence these are destitute of value. The heart has important and direct relations to the brain, and it is very likely that just as disturbances of the vagus innervations are responsible for the *raptus melancholicus*—in other words, just as a disordered state of the brain reacts on itself through the medium of the functional cardiac influence it produces—so a valvular lesion may directly influence the emotional states without pre-existing brain trouble. It is a fact that patients suffering from cardiac lesions are more likely to develop anxious and suspicious delusions than those of an opposite nature. Forbes Winslow expresses similar opinions. My own experience agrees with D'Astros and Griesinger in regard to the influence of cardiac disease on insanity. Spitzka very correctly says that the mental phenomena produced by it furnish a rich pabulum for delusion.

That insanity produces cardiac disease is demonstrated by the experience of Salemi—Pace and Milner Fothergill to point out that in states of emotional exaltation

cardiac murmurs, especially of the aortic valves, are frequent without valvular lesion.

Griesinger points out that in conditions of exaltation murmurs, particularly of the aortic valves, are very frequent without coincident valvular lesion. He states that observations in the Vienna asylum show that during maniacal conditions the heart sounds are indistinct during great excitement, and become clear when calm sets in.

My own experience is not only in accord with this, but I have also noticed that in the cataleptoid state of katatonia temporary murmurs result. These facts have a direct bearing on the prognosis of the disease. Mental and physical quiet is urged on almost every sufferer from cardiac disease. For a long time such advice is observed. The suspicious state raising from the disease and the long continued relief from untoward symptoms resulting from this rest predisposes the patient to take a different view of the state of things from his physicians. When emotional exaltation results from disease, there are but few checks on the patient to restrain his indulgence in exuberant horse-play. These features are well illustrated by the case of Matthew Arnold. Matthew Arnold came from a well-balanced English family, one of those old English families who have learned to restrain emotion. His father, the head of the famous school at Rugby, which Tom Hughes has immortalized, was also a sufferer from cardiac disease, but old Dr. Arnold was very favorably situated; he was in a position to lead a regular, uneventful life. His course of study and course of life was laid out for him, and he was held in high esteem by those by whom he was surrounded. For that reason he died well advanced in years and universally regarded as a gentleman of peculiar sweetness of temper, amiability, and exactness in all particulars. Many of these traits were noticeable in his son, Matthew Arnold, who has just died. He called himself peculiarly the "Apostle of Sweetness and Light."

He preached to a certain extent a philosophy somewhat modified from the theory of the quietest philosophy, which was practically a survival of Buddhism. There is little doubt but that admiration of this restraining philosophy, which Arnold adopted to a certain extent (as did Cowper, another man of letters who was demonstrably insane) had good results. Matthew Arnold's disease improved under the influence of this philosophy which tended to restrain all emotional display. His training also restrained all emotional peculiarities as "bad form." For a long time Matthew Arnold was in many respects a model man. About twenty-five years ago he contracted heart disease in consequence of a rheumatic attack which affected the aortic valve, and I believe there finally developed a mitral lesion, too, but of that I am not certain. The aortic valve was affected, and he had aortic stenosis. Through the advice of Sir Andrew Clark he led for a long time a comparatively quiet life. He devoted himself to subjects in literature that would tend rather to restrain the emotional element than to develop it. On the other hand, of late years he had been less restrained. In point of fact it was one of these emotional displays that alarmed Sir Andrew Clark and made him lay the injunction on Matthew Arnold to lead a restful life. At times his disposition was anything but sweet; some of his poems, one of which has been republished recently, in dealing with the medical and clerical professions, manifests a cynicism which would not discredit Swift.

This cynical mood was purely spasmodic, and it was often replaced by one in which his title of Apostle of Sweetness was well deserved. It is noticeable that the same period of buoyancy was succeeded afterwards by one in which horse-play was a distinguishing characteristic of the apostle. In the period preceding his death these alternations were singularly frequent and well marked. He had been exceedingly bland and buoyant. Soon after he decided

to show his young friend his manly agility, attempted to jump over a gate and fell dead.

The bearing of these facts on prognosis is simple and direct. Mitchell Bruce has pointed out that the prognosis of cardiac disease in what he calls "nervous cases" (which include cases where emotional mobility is well marked), is unfavorable.

The cardiac disease but too often produces these emotional states, and they aggravate the cardiac disease. Given, therefore, a case of cardiac disease in which emotional displays occur frequently these last indicate moral treatment; and furthermore indicate a very unfavorable prognosis, more especially since, as already stated, too often suspiciousness occurs resulting in distrust of the physician and of remedial measures. These frequent perturbations cause a nutritive change in the heart, and as Bruce, A. Mickle, and Salemi-Pace have shown, are very important factors in the production of cardiac weakness.

The point on which I desire to lay stress is that this great buoyancy which occurs in the course of these troubles is as much a part of the disease as the murmurs, and furthermore, instead of feeling encouraged by the patient's buoyancy and good spirits an effort should be made to restrain them as much as possible. This emotional factor in most ordinary disease is a good deal ignored; and this is particularly true of cardiac disease, though by the older authors, Griesinger and Watson, attention is called to these facts. A good deal could be done by moral measures to restrain these emotional displays, and by remedial measures, and control of the heart's action by the proper use of certain cardiac tonics. A case of cardiac disease in which these emotional phenomena occur with great frequency, is very likely to have a bad prognosis, since the emotional condition is produced by the cardiac disease; and, on the other hand, these recurrences of emotional excitement are more and more likely to be followed by cardiac failure and degeneration. For this reason I desire to call atten-

tion to this somewhat neglected phase of disease.

Dr. ROBERT H. BABCOCK: I regret exceedingly not having heard the first part of the paper, and so rise with some hesitation, but I would like to ask the author whether he attributes the mental symptoms to the cerebral hyperæmia produced by the heart disease; or whether, perchance, to faulty digestion and faulty elimination, since the liver and kidneys are interfered with in their functions from a passive hyperæmia set up by these heart cases. In my experience with these cases I have found the mental state of the patient to depend very largely upon the state of the liver—digestion, so to speak—and the mental state is relieved by measures which will relieve the engorgement. I find the alternation of mood, melancholy, hilarity, etc., relieved by regulation of the diet, and I have had this fact especially impressed upon my mind within the past two months by a case of advanced heart lesion, in which, owing to the great enlargement of the liver I decided to cut off all nitrogenous diet from the patient—that is, in the way of meat and eggs, and limit her to a vegetable and farinaceous diet with milk, and as a result the improvement has been exceedingly marked, and is noticeable in the mental state as well as in the physical. I would like to hear the opinion of the author on this subject. It seems to me that if we paid more attention to the proper nourishment of the patient, with reference to the ability of the digestive organs to carry out digestion to its fullest extent, instead of stopping short at the production of uric acid, we could do much more to regulate those alternations of mood.

Dr. N. P. PEARSON: I would ask if the urine had been examined in this patient? I think it is necessary wherever we wish to make a complete diagnosis. In heart disease there is likely to be passive hyperæmia of the liver and kidneys, and our pathology teaches that biliary acids and renal matter are liable to derange the brain, and pro-

duce all the symptoms spoken of. I always insist upon a careful examination of the urine in such cases in order to distinguish between hyperæmia of the brain and a disordered state of the liver and kidneys.

Dr. KIERNAN, in closing said: The conditions referred to by Drs. Babcock and Pearson, while deserving of attention, hardly come under the category of the mental phenomena to which I desired to call attention. They are more permanent and less fluxionary.

The use of urinalysis, while of value in the permanent type, is rather too gross a test to be applied in the rapid fluxionary types.

BAYARD HOLMES, M. D., read a paper entitled "Secondary Mixed Infection in Typhoid Fever," which appeared in the August number of this journal.

Dr. CLARK GAPIN: I rise to acknowledge my sense of obligation to Dr. Holmes. He has in the most skillful way written up a subject that is to me of great interest. I would like to ask that in his summing up he will state what, in his study of typhoid fever, is the best means of preventing the attacks of these little monsters of which he has so interestingly written, especially as they come from water. I believe that it is stated that the greatest source of danger is water; probably greater than all other sources combined; especially the water of large cities. I hope the author will suggest some means of treating water that will be certainly destructive of all germs.

Dr. HENRY GRADLE: It seems to me that the Society owes Dr. Holmes a little more recognition than to accept his paper in silence. As far as I am aware, this is the first attempt to trace clinically the history of a disease as a series of successive infections which has hitherto been considered as an etiological unit. The light which the address has thrown upon the subject seems to me to illuminate the clinical points more elaborately than microscopical research has as yet done. He has

based his paper on analysis, and in many cases on inferences of such a positive nature that I believe, from a clinical point of view, a great deal of information can be admitted as correct, although not fully substantiated as yet by the necessary microscopical research. This question of mixed infection will probably take a greater place in our views of pathology than has hitherto been accredited to it. I believe it is not difficult to point out a large number of instances where there can be no doubt about the clinical unity consisting of several separate factors, although unlike typhoid fever, the actual proof is wanting. Take, for instance, small-pox, or simply cow-pox. Up to the present time I believe it is generally admitted that the etiological factor productive of these two diseases has not yet been determined; we are not yet in a condition to say which parasite causes small-pox and cow-pox, but we know both of these diseases have a certain clinical source, the latter part of which is entirely due to micrococci, the familiar staphylococci of suppuration. These have been isolated, and with them we can reproduce certain features common to small-pox and cow-pox, but we cannot reproduce the original diseases. They are the scavengers, so to speak, that follow the original parasite, but can be separated from them by culture. Whenever we vaccinate an individual we get not only the cow-pox pustule, but the ultimate pustule due to micrococci of suppuration. Similarly, diphtheria is due not to one parasite alone; the original parasite, the identity of which is not absolutely established, does not enter into the deeper tissues; it is limited in its ravages to the mucous membrane, which it invades, but the secondary stage is due to septiciæmia from micrococci infection. It is the same in a great many other internal diseases, the parasites of which have not been recognized with certainty, while we are acquainted with the causes of septiciæmia accompanying them, and representing a secondary infection.

Professor FRANK BILLINGS: I want to add my mite of thanks to Dr. Holmes for this most excellent paper. Some time ago, when I learned from Dr. Holmes that he was going to write on this subject, I called to mind several cases that illustrate his paper.

While an interne in Cook County Hospital, during August, September, and October, 1881, there were over one hundred patients daily in the hospital suffering from typhoid fever, and quite a number of these cases illustrated well the subject of Dr. Holmes' paper. Two or three cases were so emphasized to my mind that I remember them quite well. One, a young Swede about twenty-four years old, suffered from a severe form of typhoid fever three or four weeks. During convalescence he had left iliac phlebitis with secondary fever, and subsequently he had at least twenty subcutaneous abscesses all over his body—on the back, abdomen, thighs, and also an abscess of one middle ear. He had, in other words, a pyæmia, and it seemed to result from that thrombosis of the left iliac vein, for suppuration resulted there primarily. He was removed from that ward into the infectious portion of the hospital, so that I did not see him again. But he finally recovered under proper care.

I remember another case, a young American twenty-one years of age. He was sent to the hospital suffering from a very severe form of typhoid fever, and in his convalescence he suddenly developed subcutaneous hæmorrhages all over the abdomen and on the inside of the thighs. He must have had capillary emboli, and of course they must have come from some infection, whether you call it bacteria, or what not. Small abscesses resulted wherever these little spots appeared; the hæmorrhage became diffused in places, but the suppuration was never excessive.

In another case secondary unilateral empyæma occurred. I could give other cases, but these are sufficient to serve as examples of what Dr. Holmes has so ably

shown us to be a secondary infection in typhoid fever.

Dr. HOLMES, in closing the discussion, said: I wish to thank the Society for the reception given this paper, and to say that I have attempted no discussion of the etiology or treatment of this well-known disease. I must admit that the remarks of Dr. Gradle contained the whole truth. The deductions in this article are rather more extensive than our knowledge of the subject will at present permit, but I have every confidence in the verification of most, if not all, of my statements, by subsequent investigation.

TRANSACTIONS OF THE GYNÆCOLOGICAL SOCIETY OF CHICAGO.

The Regular Meeting was held on Friday, June 29, 1888, the President, HENRY T. BYFORD, M. D., in the chair.

Dr. DANIEL T. NELSON presented a "Sarcoma of the Ovary with half-twisted Pedicle, removed by autopsy."

He said: I have a specimen here, the interesting points of which will be brought out in the history. This was a post-mortem operation, but it demonstrates, I think, that sometimes surgical interference may be the better course when the patient's condition is nearly or quite hopeless. It is better for us at least to make an exploratory incision and arrive at a clearer diagnosis, which will possibly enable us to do something for the life of the patient, than to pursue an expectant course. It would seem as if this patient might have been saved had an operation been attempted early enough; probably she was not seen by any physician in regular attendance early enough to have insured her life by operation, still there will always be a doubt in regard to that.

I first saw the patient in consultation several days before she was taken to the hospital. She was a patient of Dr. J. E. De Wolf, of Englewood, whom I invited to be present to-night, but, unfortunately, he had a professional engagement. She

was taken to the Woman's Hospital, but operation was delayed from one day to another, waiting for her to improve in condition, which she never did, and we have the tumor here by post-mortem removal. Her history is very scant, and yet some points in it are of interest, and will raise queries that I trust some of you will be able to answer.

Mrs. M. entered the Woman's Hospital June 7, 1888; occupation, housewife for many years; age at puberty, twelve; age on entering the hospital, thirty-nine. She was born in America of French and German parents, had been twice married; the first time seven months, the second time seventeen years. She was the mother of nine children, one by her first husband and eight by her second. After the birth of her last child, seven years ago, she did not menstruate for four years; since that time there have been irregular menstrual periods. It is so stated in the history, and yet I think we should rather say there were hæmorrhages from the uterus during these past four years. One year ago she noticed a fluid discharge from the rectum. This is a nice question in pathology, to my mind. She gave evidence of some inflammatory process in the right ovarian region—tenderness, soreness, some elevation of temperature, was confined to bed for a time, and there was a sudden discharge of a considerable quantity of blood. Such quantities are never rightly estimated, but the amount was guessed at by the patient at more than a pint, and supposed by her to have passed from the rectum. Perhaps that was not correct; at all events, after that bloody discharge, she was relieved of the swelling, the tenderness, the inflammatory process, whatever it was, and resumed her ordinary duties. Some time afterward, but unfortunately the record does not say how soon afterward, she began to suffer from swelling in the same region, that continued up to her death. There was constant soreness in the right inguinal region; three months ago the abdomen began to

enlarge and she to gain in flesh, strength, and vigor, so that her attending physician, without making a local examination, and especially her neighbors, supposed she was pregnant. She felt comparatively well until four weeks previous to entering the hospital, when she began to suffer severe pain, tenderness in the right inguinal region, and there was evidence of some kind of tumor. On going to bed with her last illness, about a week before she entered the hospital, her physician became satisfied that there was something more than pregnancy, that there was inflammation of some type. Some days before she entered the hospital I saw her in consultation, and advised a removal to the hospital in the hope that there might be some kind of an operation for her relief. On entering, her temperature was $100.2-5^{\circ}$ Fahr., pulse 104. The following day the temperature was $100.4-5^{\circ}$ Fahr., pulse 132; the following afternoon the pulse was 132, temperature 100° Fahr. and a fraction. On the morning of the fourth day the temperature ran down to $99\frac{1}{2}^{\circ}$ Fahr., and the pulse to 119. Possibly an operation might have been performed then, and her life saved, but a more convenient and better time was sought for, that never came. There were the usual evidences of peritonitis, and death in the usual way followed. When she first entered the hospital her bowels were moved, but not afterward; vomiting came on the third day, but passed off on the fourth, when probably an operation could have been performed with the possibility of saving life. She died on the sixth day after entering the hospital, and a few hours after death a post-mortem examination was made and this tumor removed. The appearance is somewhat changed now, but yet it presents fairly well the appearance at the time of the autopsy. You notice the dark, venous, congested appearance of a portion of the tumor. This was the anterior portion as it presented against the abdominal wall, very slightly adherent; no adhesions from old inflammation, either to omentum

or other structures, but a *half-twisted pedicle*. The pedicle has been tied in such a way as to retain that appearance as much as possible. Here we have the broad ligament that is simply half twisted and tied in that position on purpose. The evidence of completely twisted pedicle and death of the tumor were not present. There was simply an increase in size resulting from the congestion, but no sloughing, no death of the part; a slow, inflammatory process had taken place in the tumor and subsequently in the peritoneum that was the cause of death. The obstruction of the bowels, I believe, was due to the peritonitis, and not to pressure from the tumor. It has not been my privilege to see a patient with a tumor and twisted pedicle, but it seems to me I could have recognized it; but this being only half-twisted, the circulation was impeded, not stopped. The tumor has been examined by Dr. Frank Carey, and the report is sarcoma. There was, so far as I saw, and I made a rather hurried examination, no evidence of the disease extending to other organs; there is no evidence of it in the pedicle; there was no evidence in the glands or intestines or other structures adjacent; so it seems as if it could have been entirely removed if the operation had been performed during the life of the patient. The uterus was a little enlarged, but no other evidence of disease about it. I made a diagnosis of malignant tumor, without being exactly certain as to its nature, but it seemed to me malignant on account of its rapid development and the age of the patient. I did not regard it as a uterine tumor, as the uterus was movable and the tumor seemed to be separate from it. Within the abdominal walls there was a considerable amount of ascitic fluid, so that the abdomen was very tense, and it was difficult to say whether or no the tumor could be moved readily within the abdominal walls. I was unable to say whether or no there were adhesions, but from the ascites I hoped not.

Professor CHRISTIAN FENGER presented the following specimens:

FIBRO-CYSTO-SARCOMA OF THE UTERUS.

This specimen was removed by laparotomy from a woman of thirty-five, who had a tumor the size of a child's head, immovably connected with the uterus at the fundus, and also two small myomas that could be felt through the vagina. The large tumor showed fluctuating places on the surface, by palpation through the abdominal wall, and I concluded that it was an ovarian cystoma, either located in the broad ligament or sufficiently adherent to the uterus to make them move together. At the operation I found it to be a cysto-fibroma, or fibro-cysto-sarcoma, subperitoneal, but attached by the broad base to the uterus at the fundus. After temporary elastic constriction around the cervix, the tumors were enucleated, and as the uterine cavity was not opened, I united the wound of the wall of the uterus with buried step sutures, deep and superficial, and a final continuous suture along the inverted borders of the peritoneum.

At the close of the operation all hæmorrhage had apparently stopped, consequently I did not drain. In the course of the first week some fever set in, and on the tenth day I reopened the lower border of the wound, and evacuated about three to four ounces of blood, mixed with pus, from a cavity surrounding the body of the uterus. The evacuation and subsequent washing out and drainage did not have much influence on the patient's condition. The fever continued; she had a large gangrenous bed-sore over the os sacrum, and died six days later, in the third week after the operation. The autopsy showed no peritonitis, and the cavity, with the accumulation of blood and pus, was found entirely separate from the general peritoneal cavity. On examining the uterus, I found, as you see here, surrounding the line of the uterine wound, an island of gangrenous tissue including the wound and a square inch or more to each side. This gangrene explains the per-

sistence of fever and sepsis, notwithstanding the evacuation and drainage.

The large tumor has, you see, a smooth surface. On the cut surface, in some parts, there was an appearance of myoma; in other places, islands of softer tissue, looking like myxoma or sarcoma, and in other parts, cystic cavities. These cysts have not the usual shape and appearance of cystomas, but are irregular, triangular, or longitudinal sinuses, the walls of which are not smooth, but trabeculated, so as to give the appearance, as Dupuytren describes it, "similar to the walls of the ventricles of the heart."

I shall here make a few remarks on fibro-cystomata of the uterus, because they are comparatively rare, the whole number described in the literature not being much above one hundred. Fibro-cystomata are, as the name indicates, forms of fibromata, or myomata, and it is a comparatively rare change in the pre-existing elements of these tumors that gives them the additional characteristics of cystomata.

We distinguish between the following varieties: Myxo-myoma, as described by Virchow, characterized by œdema of the interstitial tissue, and by the fluid in the spaces containing mucin; consequently it is something more than a simple œdema of the myoma. Spread islands of embryonal cells are also proof of a more active process, terminating in myxomatous, or even sarcomatous, tissue. Besides the œdema in the interstitial tissue of the myoma, we find œdema and atrophy of the muscular fibres, isolated fibres, or their débris mixed with the fluid in the cavities. These cavities are of all sizes, from the microscopic, as shown on this slide, up to the size of a pin's head or walnut, and we even find cavities of enormous size containing several quarts of fluid. The cavities are lined with pavement-celled epithelium, or rather endothelium, as you would expect, since they originate from dilated lymph spaces, or naked when the cavity is formed by the disintegration of muscular fibres. The cavities

contain clear, colorless, or bloody fluid that often coagulates spontaneously when evacuated—a fact that Atlee pointed out as a differential diagnostic sign in contradistinction to the fluid from ovarian cystomas. A special form is described as fibro-myoma lymphangiectodes, by Leopold. Distinctly different from this is the myoma teleangiectodes sive cavernosum of Virchow, with multiple cavities from the size of a millet-seed to that of a pea, communicating with the blood-vessels, and consequently containing pure blood. These tumors are found to enlarge during menstruation (Virchow), and on auscultation a bruit is heard (Péan).

As to the place of development, the great majority are subperitoneal. Of the seventy cases gathered from the literature by Heer, sixty-three were subserous, five interstitial and only two submucous tumors. They sometimes attain an enormous size, weighing twenty-nine, forty, and in one instance even eighty-one pounds.

The cysto-fibromata are most often found between the ages of 30 and 50. The symptoms are in the main, of course, the same as those of common myomata and fibromata. Uterine hæmorrhage is rare because, as before mentioned, they rarely develop close to the mucous membrane. A more characteristic symptom is a sudden enlargement, probably from acute increase in the size of the cysts or from intracystic hæmorrhage. The spontaneous coagulation of the fluid would be a valuable symptom if it was constantly found, but in about seventy cases it was noted in only eleven (Heer). It might, however, in reality, be more frequent, since in a number of cases it might not have been noticed (Gusserow). The lack of vitality shown by the tendency to local gangrene is also somewhat characteristic of these tumors. Thus Grammaticati, as stated by Gusserow, saw a myoma the size of a child's head, located in the wall of the cervix, undergo superficial necrosis, followed by sepsis and death.

It is rather noteworthy that a correct diagnosis was rarely made. They were almost always taken for ovarian cystomas, and a number of them were punctured. Puncture, however, in this form of cystoma is far more dangerous than in other cystomas, as shown by Leopold, who found that, as a consequence of puncture, ten patients out of eleven died. McGuire, therefore, is right in asserting that exploratory laparotomy is less dangerous than puncture.

The treatment should be early extirpation, because of the probability of rapid enlargement, the danger of puncture, the liability to gangrenous or septic changes, and thrombosis of the vessels in and around the tumor. Gusserow gives a series of forty-one laparotomies with twenty-two recoveries, the cause of the high mortality being the necessity of the removal of the uterus in some of the cases. Occasionally the operation cannot be finished; thus, according to Gusserow, in thirty-eight cases, seven were unfinished, and of the seven, six patients died. That an exact diagnosis, with a definite premeditated plan of operation, is of extreme importance, is shown by Gusserow, who out of eleven cases described in the literature, reported nine recoveries.

A few words about uterine sarcomata, inasmuch as the tumor here presented is a mixed form of cysto-fibroma and sarcoma. In the uterus we distinguish between circumscribed and diffuse sarcomas, the former originating in the muscular wall of the uterus, the latter in the mucous membrane. The circumscribed uterine sarcomas are of the most interest to us in this connection, as they stand in near relationship to fibromyomas and fibro-cystomas. They form, usually, round, circumscribed, harder or softer tumors, looking like, and developing in the same places as, the fibro-myomas, and so similar to these that we must class the relapsing fibromas of Paget among the sarcomas. But besides more or less typical fibrous or muscular cells, here we find islands of short, spindle-shaped, round or

polymorphous cells, or islands of myxoma tissue; in general, a more vivid cell-formation than in fibromas and myomas; and we further find in the same tumor in different places different forms of cells. So predominating, however, are fibroma or myoma tissue cells that Schröder regards it as a law that the circumscribed sarcomas are always formed by transformation of fibromas. According to Guserow, the transformation of fibromas into the mixed form of fibro-sarcomas, myxo-sarcomas, and cysto-sarcomas is so rare that the literature shows very few well-observed cases of this kind. By examining the microscopic slides that I exhibit to-night, we find, in some portions, apparently typical myo-fibroma tissue, without or with dilated lymph spaces, in which we find granulated matter containing loose or isolated muscular cells; in other places, islands of typical myxoma tissue, here and there islands of embryonal cells; in another part of the tumor, territories of short, spindle-shaped cells, large and with oval or round nuclei; in other words, islands of unmistakable sarcoma tissue; and finally, places of common typical, round-celled sarcoma tissue.

As to the age in which fibro-sarcomas of the uterus are found, there is this difference from the cysto-fibromas, that although they both are most common between the ages of 30 and 50, the sarcomas are still common between 50 and 60, while the cysto-fibromas, as we have seen, stop at the age of 50.

As regards treatment, the sarcoma is a malignant tumor, and needs more extensive removal or radical treatment than the benignant cysto-fibroma. The removal of subserous or interstitial fibro-sarcomas by abdominal supra-vaginal extirpation and extra-peritoneal treatment has often been followed by a growth of sarcomatous tissue in the cicatrix in the abdominal wall. The abdominal total extirpation of the uterus can hardly be said to have lost much of its dreadful mortality of about 70 per cent.

from the time of Freund's first operation till now.

In the treatment of this case the following suggestion occurred to me—a suggestion which was not carried out because of the patient's death. I should operate as I did, enucleating the subserous tumor, and if the uterine cavity was not opened, try intra-peritoneal treatment of the stump. After recovery from this operation, if the microscopic examination of the tumor proved it to be a fibro-sarcoma, I should follow, as soon as the patient's strength would permit, by vaginal extirpation. In the rare cases in which the size of a diagnosed circumscribed uterine sarcoma or fibro-cystoma will permit of vaginal extirpation, this operation is, of course, the only one indicated.

The two other specimens are not strictly gynecological, as they occurred in men. However, they had this in common with gynecology, that laparotomy had to be made.

COLLOID CARCINOMA OF THE CÆCUM.

This specimen is a tumor of the cæcum, a so-called colloid carcinoma. The patient was a man of about forty, in whom, for about six months, an increasing tumor had developed in the middle of the abdominal cavity. When I saw him, the tumor was of the size of the head of a child of four, was somewhat movable from side to side, and up and down. There were never any disturbances from the side of the intestines, but emaciation and considerable pain. I thought it a tumor of the omentum on account of its mobility, also that it was malignant because it was hard, nodular, and of rapid growth, but I did not think of the intestine being the seat because there were no symptoms. When the abdominal cavity was opened, I found this large nodulated tumor with a great many adhesions to the omentum and some to the intestines, and finally having separated these and applied a great many ligatures, when I got the tumor isolated and out through the abdominal wound, I found the ileum pass-

ing into one side of the tumor and the ascending colon coming out of the other side. I then divided the ileum and ascending colon two inches away from the tumor, detached and ligated the mesentery, and after the removal of the tumor closed the ileum and ascending colon in the usual way by invagination and suture, and made an anastomosis between the lower end of the ileum and upper end of the ascending colon by means of Senn's decalcified bone plates. The territory of approximation was covered by an undetached omental flap. I preferred this operation to circular resection or implantation of the ileum into the colon, because of the shortness of the plate operation as compared with the others. The patient lived four days, was able to take some liquid nourishment, had no vomiting, no tympanites, showed no symptoms of sepsis or peritonitis, but gradually became weaker and died. The autopsy showed no peritonitis; the ends of the upper and lower bowel were closed, as you see in this specimen, the closed ileum and closed end of the ascending column, and at a distance of two and a half inches the anastomosis covered with the omental flap which did not adhere. The peritoneal surfaces between the plates are perfectly united, allowing of no escape of liquid or air. The passage between the ileum and colon is perfectly free, as you see after opening the opposite wall of the intestines. The tumor shows at this point the ileum entering the large irregular cavity containing some liquid feces, slightly tinged with blood, and at the upper end of the cavity is the ascending colon. This enormously thickened wall of the cavity, one and a half to two inches in thickness, is the carcinomatous intestinal wall, the cut surface presenting the characteristic gelatinous appearance of colloid carcinoma. This form of carcinoma has as its characteristics, in distinction from other carcinomas, colloid degeneration of the cells, causing them to enlarge, meet together, and form this trans-

parent gelatinous substance. While we do not recognize a colloid carcinoma as distinctly different from carcinomas in general, as we know that partial colloid degeneration is common in all carcinomas of the intestinal tract, clinically, we recognize the extremes of this degeneration as a distinct form, characterized by its enormous size, and not uncommon in the stomach, large intestine, and peritoneum. In the peritoneal cavity there were no secondary tumors nor were the lymph glands of the mesentery invaded. This is what we should expect, as this colloid carcinoma is, as a rule, relatively benignant, with little tendency to the invasion of distant tissues or organs.

The death of the patient I ascribe to the fact that when the vitality has been lowered to a certain point by malignant tumors, without or with functional disturbances of vital organs, the organism loses its power to withstand more than a certain amount of operating, and death will follow from the yet unexplained exhaustion in spite of the absence of all the common well-known fatal complications.

DOUBLE CARCINOMA OF THE COLON.

The third and last specimen is from a man between forty and fifty, who had suffered terribly from difficult passages from the bowels for a number of months. Finally a small, almost immovable, tumor appeared to the right of the umbilicus, and later on distention of the small intestines, with pain and vomiting. Every half-hour or hour there would be a paroxysm of peristaltic contractions with excruciating pain. He finally asked to be relieved at any risk. On account of his extreme emaciation and weakened condition, I thought it out of the question to attempt extirpation, and resolved to try to relieve him by means of anastomosis between the intestine above and below the stricture. Laparotomy revealed the tumor to be a carcinoma of the ascending colon; consequently I united the lower part of the distended ileum with the empty transverse colon five or six

inches away from the tumor. The patient did not get much relief and died ten days after the operation, growing gradually weaker, as in the other case. The autopsy showed no peritonitis, the omental flap was partially adherent to the intestine, the peritonæum between the plates united, but at the distal end of the plate, in the colon, an island of necrosis of the intestinal wall from pressure-atrophy caused by the plate. Thus, in this case, perforation of the intestine was only a question of a short time. The carcinoma of the ascending colon, as the specimen shows, is three inches long and has caused almost complete occlusion of the bowel. The reason why no relief followed the operation was found below the anastomosis in the splenic flexure of the colon where a second carcinoma had developed, causing, as you see, almost complete obstruction of the colon. This second carcinoma was not discovered during the operation, as it was hidden high up under the spleen. The emptiness of the transverse colon, together with the rarity of a second carcinoma, was the cause of my not suspecting its presence. If it had been discovered, the anastomosis would have been made between the ileum and the sigmoid flexure, of course. The mortality from even palliative operations upon the intestines is large, because, as a rule, the patients do not come to us for operation until they are exhausted by serious intestinal disturbances, usually of long continuance. This is so generally the case, that collapse, even after a short operation, is of frequent occurrence.

Senn's operation of intestinal anastomosis with the plates does not take any more time than the abdominal operation for artificial anus. The last operation here mentioned was of thirty-eight minutes duration, from the time of the incision in the abdomen to the dressing of the abdominal wound.

THE PRESIDENT: I intended to exhibit, for Dr. William H. Byford, a uterine cystomyoma possessing all the characteristics of

the one just presented by Dr. Fenger, but found to-day that the specimen had been allowed to spoil. It was pedunculated, slightly adherent in places, trabeculated within, and quite full of collections of serum that coagulated upon exposure to air. The patient was operated upon two weeks ago, and is passing through a rapid and easy convalescence. The pedicle was treated extra-peritoneally, and the abdominal cavity closed without drainage.

The PRESIDENT exhibited

A SUBSEROUS FIBRO-MYOMA OF THE CERVIX UTERI AND AN OVARIAN CYST.

I have here a subserous fibro-myoma of the cervix uteri and an ovarian cyst, which were removed three weeks ago from the same patient by vaginal section. I made first an exploratory incision in the recto-uterine cul-de-sac, and got behind the tumor, but could not get over it into the free peritoneal cavity. I then separated the uterus from the bladder, reached over the fundus, and ascertained the relation of the parts. I then pulled down the cervix and ligated the broad ligaments from below upwards. The capsule of the tumor was covered by a thin layer of peritoneum, except where it was imbedded in the cervical walls.

The interesting point was the size of the tumor, its relations, and the apparent impossibility of getting it out without taking the whole uterus. Although the operation was difficult, its severity did not seem great, for the patient is getting along very much the same as after a normal confinement.

DERMOID CYSTS OF THE OVARY.

I have here a dermoid tumor consisting of two cysts removed five weeks ago. The tumor was about the size of a child's head and filled with chocolate-colored fluid and hairs. Some of the fluid escaped and flowed into the peritoneal wound. The peritoneal cavity was flushed with water and drained. The recovery was the same as a favorable case of oöphorectomy. The other ovary had undergone cystic degeneration.

SPECIMEN FROM TAIT'S OPERATION.

Here are four ovaries showing different stages of cystic degeneration. This pair was removed from a young girl who had been treated without benefit for the last three years. She was steadily losing ground. The diagnosis was ovaritis. They were removed about nine days ago.

Here is a pair removed four days ago. They commence to show the appearance of some of the larger tumors. The patient has been an invalid for seven years and was supposed to be losing her mind. Both are doing well.

DOMESTIC CORRESPONDENCE.

CHICAGO, September 6, 1888.

To the Editor of the Medical Journal and Examiner:

Allow me to correct a misprint in the September number, that is liable to do more mischief than I would like to take the responsibility for if carried out by the otologists. Page 140, 7th line from below, has *inject* the internal wall, instead of *inspect*, etc.

While at it, I beg leave to make a few remarks about a passage on the same page. The article says: "After a discussion of the history of the procedure and a description of the various ways in which it has been employed," etc. It is needless to say that the procedure, as being entirely new, has no history; but what the *Journal* means to mention is, of course, the various operations that have been tried, and the history of which, I, in my paper, let pass review, to make the difference between these and my procedure conspicuous.

If I am allowed a little more space in your valuable paper, I would like to say but a few words more about my procedure. I presume it is understood by the otologists that this is to be regarded as an improvement of the sounding, at the same time, as by cutting through the drumhead the first and most important step is made towards operating in the middle ear, if

need be. The principal advantage of this is that all the hearing bones can be reached with the instruments, while application of sound externally don't carry its influence further than to the malleus or malleus-incus joint at most, if there is an anchylosis of this joint. Once inside of the drumhead I can apply the sound or hook on manubrium, the long process of incus or incus-stapedio joint, and can hook stapes also, although, as will be seen in my paper, I am no advocate of using violence, sufficient force can be applied on the manubrium and incus-stapedio joint to bring about this slightly increased mobility of the joints that we just want, and nothing more. I regard it a gross mistake to ever forget what a delicate structure we here have to deal with.

Very respectfully,

B. M. BEHRENS.

EXTRACTS AND ABSTRACTS.

INVESTIGATIONS RELATING TO ETIOLOGY AND PROPHYLAXIS OF YELLOW FEVER.

George M. Sternberg, M.D., Surgeon U. S. Army, stated before the College of Physicians of Philadelphia:

Having been selected by the President to make an investigation of the methods of inoculation practiced in Brazil and in Mexico, by which it is claimed that protection against yellow fever is afforded, he first proceeded to Brazil for the purpose of investigating the methods of Dr. Domingos Freire, of Rio de Janeiro, and after his return from that country went to Mexico to make a similar research with reference to the value of the method of inoculation practiced by Dr. Carmona y Valle. The conclusions reached up to the present date are: "Facts relating to the endemic and epidemic prevalence of yellow fever, considered in connection with the present state of knowledge concerning the etiology of other infectious diseases, justify the belief that yellow fever is due to a living micro-organism capable of development,

under favorable local and meteorological conditions external to the human body, and of establishing new centres of infection when transported to distant localities.

"Inasmuch as a single attack of yellow fever, however mild, protects, as a rule, from future attacks, there is reason to hope that similar protection would result if a method could be discovered of inducing a mild attack of the disease by inoculation or otherwise.

"The hypothetical yellow fever germ, multiplying external to the human body in unsanitary places in tropical regions where the disease is endemic, or during the summer months in the area of its occasional epidemic prevalence, establishes infected localities, and susceptible persons contract yellow fever by exposure in these infected areas. We infer, *a priori*, that the yellow fever germ invades the system by the respiratory tract, by the alimentary canal, or from the general surface of the body, and it should be found in the blood and tissues, or in the alimentary canal, or upon the surface.

"Another possibility presents itself, viz., that the germ, multiplying in insanitary localities external to the body, produces a volatile poison which contaminates the air, and that an attack is induced by the toxic effects of this potent chemical poison. The more or less prolonged period of incubation—two to five days in numerous cases in which the attack has been developed after removal from the infected locality—seems opposed to this latter hypothesis.

"In the light of what is known of the etiology of other infectious diseases, the hypothesis that the germ really finds entrance to the body of the person attacked and multiplies within it, is that which presents itself as most probable, and it hardly seems worth while to consider any other unless this is proved by a complete investigation not to be true. In the latter event, we would have to consider the possibility of absorption through the respiratory tract of a volatile toxic agent, or through the

skin of a poisonous ptomaine formed upon the surface of the body by a specific micro-organism which does not itself penetrate to the interior.

"Naturally the attention of investigators has first been given to a search for the 'germ' in the blood of those attacked, and in the blood and tissues of the victims of the malady.

"The researches made up to the present time have failed to demonstrate the constant presence of any micro-organism in the blood and tissues of those attacked.

"My own researches, recorded in the foregoing report, show that no such micro-organism as Dr. Domingos Freire, of Brazil, has described in his published works, or as he presented to me in his yellow fever germ at the time of my visit to Brazil, is found, as he asserts, in the blood and tissues of typical cases of yellow fever.

"There is no satisfactory evidence that the method of inoculation practiced by Dr. Domingos Freire has any prophylactic value.

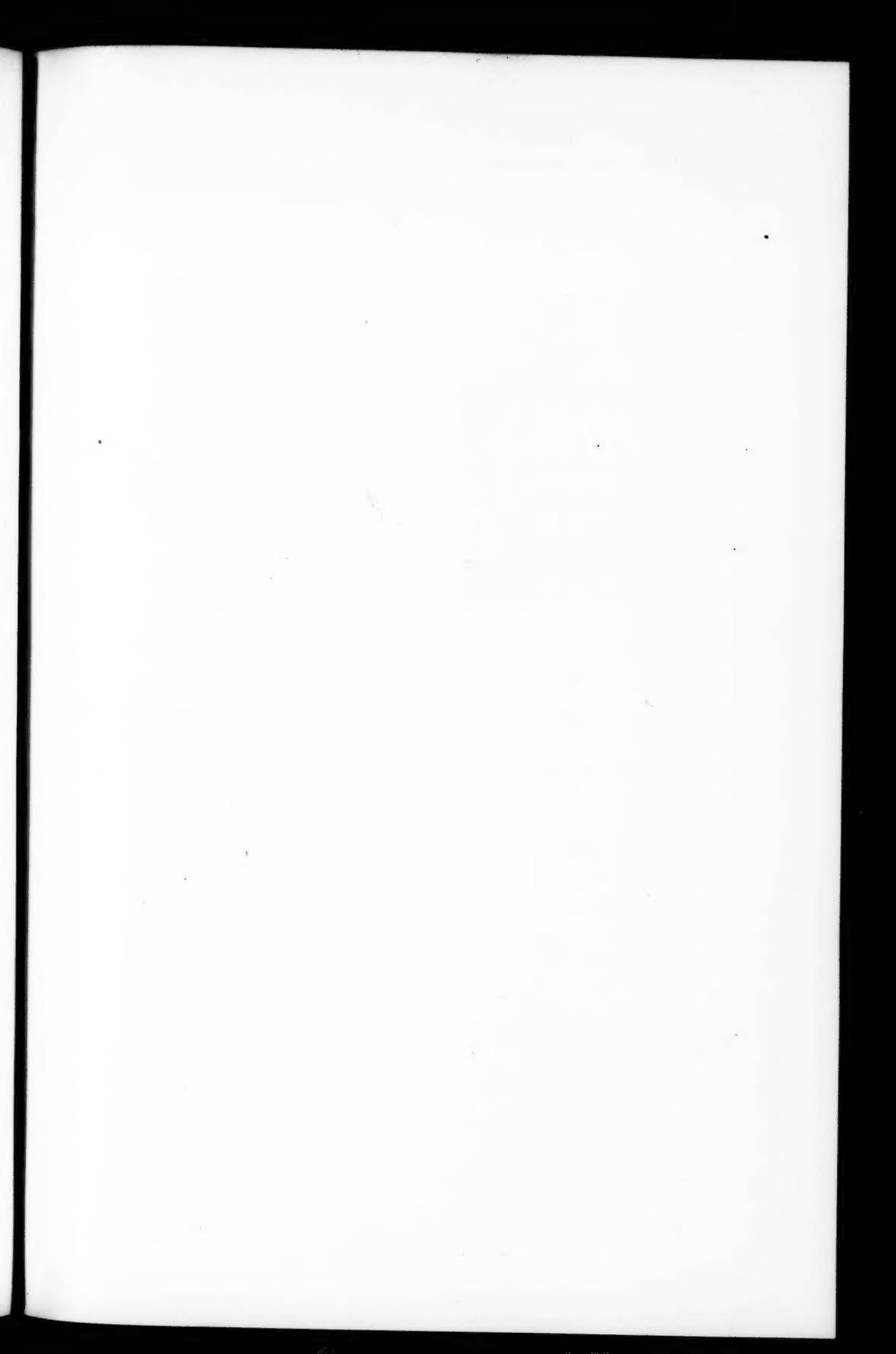
"The claims of Dr. Carmona y Valle, of Mexico, to have discovered the specific cause of yellow fever, have likewise no scientific basis, and he has failed to demonstrate the protective value of his proposed method of prophylaxis."—*Brooklyn Medical Journal*.

ANNOUNCEMENTS.

A Sanitary Convention will be held at Hastings, Mich., under the auspices of the State Board of Health, on Monday and Tuesday, December 3 and 4, 1888.

Intercolonial Medical Congress of Australia.—Preparations are already well advanced for the second congress, which will begin January 7, 1889, in Melbourne. Thomas N. Fitzgerald, F. R. C. S. I., is the president-elect. The other officers have been nominated for the congress and for the sections, which number nine, with two sub-sections.

The announcement is made that members coming from Europa, America, or India will receive free passes over all Victorian railways, and all members of the congress will be entitled to return tickets at single fares, available for two months, over all the railways in Australia. Various shipping companies have consented to carry members of the congress at special rates for the sea passage.





El Williams

PROFESSOR ELKANAH WILLIAMS, M. D.